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A FUN OUTDOOR SHOWER



the art of painting

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renewing interior woodwork



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 LEXUS

MEPP-related legislation usage: Presentations across the United States and other countries. *From other states and countries. This year survey data for required additional assessment, 2008-09 school year. **2009-10 Areas of Concern of Their Influence Index is U.S. The survey results provide more detailed information.

Bugged Out

The C.L.A. method of snatching out and destroying inbreeding, poverty pests and other human bugs that dare to invade a house has nothing to do with the Central Intelligence Agency, but it's smart, does results.

FEATURES

Big Brass Buttons

Big Brass Buttons
Buttons, cast and ingeniously carved by hand, were considered an art form a century ago. They still are, thanks to an embellishment factory in—of all places—the middle of New York City.
BY JACK MCCARTHY

Raise High the Flagpole, Carpenters

post-in time for the Forest of July. *Warm Above*: about how simple this weekend project can be.
By VICTORIA C. BOYD

An American Craftsman

Peter King, a Florida-based ceramicist, converts everyday gags, gags and mirth into sculpture.

Standing in the Backyard, Naked and Wet

Building in the Backyard, Trained and Wild
Even on cold days, an outdoor shower turns the simple act of bathing into a rhythmic embrace with nature. Building one is not only disarmingly simple but also easy on your wallet and marriage.

Safe Rooms

Safe Roots
Burglars are unlikely to break in when someone's around, but home owners seeking peace of mind will find a high-speed, dash-proof barrier of steel and polycarbonate panel sections.

The Bath as Institution

This Old Master helps a San Francisco couple build a bold bath with salvaged sheets of marble and porcelain sinks, chrome trim, dark wood floors, and fixtures that give new meaning to "period pieces." By Karen Langley

Paint Like a Pro

John Doe records his painless success for going uperior mesodermik a shell surface, a coating that
particularly looks just about of looking as if it's been sprayed on. The walls aren't smooth, but they are.

The Poster: Sprinklers

THE PORTER OPTIMIZER
How dogers, used! For more than 100 years, portable grinders have made American lumber great.
By VICTORIA C. ROBERT

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1000



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GREAT, WE LEAVE THE GAS GRILL ALONE WITH THE CHARCOAL GRILL AND LOOK WHAT HAPPENS.

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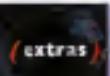
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James Motor discover that made-joke license plates feature factory One problem. Production exceeds consumption.
BY JEFFREY MARSH LARSON

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No other tool can finance fine scrolls, cut detailed curves and rip through wood faster with such speed, precision and quiet.
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Medium-density fiberboard is actually more dimensionally stable than solid wood, and it's easier to paint or stain.
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Not even a towering stack of contractor's bills can change the fact that deer is truly blushing when it comes to the perfect house.
BY BRUCE YATES

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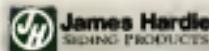
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CONTRIBUTORS

DANIEL GEORGE BORDON has written 31 books on art, including *Field Guide to the Big Bragging Book* and the *Ent-a-ling Codicil* (*The Speed Read*, just released). A former writer and self-taught expert on art who lives in Fort Lauderdale, Florida, Daniel gives a lesson called "The Complete Crookish Traveling Sales Show" at fairs and museums around the country. Local newspapermen have called him a "traveling sales monkey." Among other "Stop Churn Bugs" (*page 306*) for *The Old House*, he says, "desperately my apprehension of the spiders who like to hang out in my office."



"I guess they just thought, 'Milwaukee—Lon Brooks,'" says **LON BROOKS**, whose first T.O.M. assignment was dismantling the side to square it over at that massive Off the Wall collection ("Start Spreading the News," *page 211*). Discovered but untrained, Brooks accepted the T.O.M. job and started doing more jobs. "My neighbors own horses, so they brought me a little sample from their stables," he says. "I actually profited first. I'm trying to use it in my rose garden." A resident of Glen Ellen, California, Brooks has done dispositions for the owners of *Time* and *Ninewatch*.

ROB YATES is a rancher on Wyoming's New York—a town of 210 residents—extending beyond the scope of Farm 104, the 6½-room house on 16 acres that he built about 10 years ago. The Mooney house (*page 431*). He also owns two local contractors, ConocoPhillips Gas—and the Butch Karpinski store, which Yates runs—and Gaslight Food and Drug. Not a man to let practical demands impede the pursuit of speed, Yates enjoys riding his Harley-Davidson Heritage Softail motorcycle in the country roads surrounding Fremont. His book, *The Last Gentleman*, a memoir history of the Harley-Davidson, will be published by Louis, Louria and Company in the fall of this year. Yates is also editor or large of *Cat and Driver* magazine.



"Everyone seems to have a different opinion about how we grow," says photographer **MATTHEW BURTON**, "and John Doe definitely had his ideas." Burton—who photographed "The Art of Primitive Woodwork" (*page 110*) as well as our poster on dislocations (*page 111*)—when asked if he and friend himself. He said, "We will be incorporating the stable on their update New York 'gentlemen's farm' to serve as a photography studio. But on the outside, Burton says, "We're trying to create a 17th-century environment. Every minute we're out working at our jobs, we're working on the house." A self-described "obsessive gardener," Burton has photographed work for *House & Garden* and *Garden Design* as well as *Condé Nast Traveler* and *GQ*.

HELP

LETTERS TO THE EDITOR

Got a problem? No cashflow? Get a grip! We're listening. Share a happy experience with a neighbor or friend? Click on our E-mail at Letters.Bloomberg.com, or write to Letters, The Old House magazine, 1101 Avenue of the Americas, New York, NY 10036. Please include your phone number.

ART MARK

We print favorite reader responses to *Play Old Master* magazine, 1015 Avenue of the Americas, New York, NY 10036, and get stories from cities all over.

DISINTEGRATION AND REPAIR

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The Old House

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Illustration: Tom O'Brien from *Photo: Studio* (© 2000 Scholastic Inc.)

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PEACE OF MIND





KEN O'DONNELL 1922-1995

The TV News associate producer Ken O'Donnell was among 205 people killed on February 14, 1995, when Pan Am flight 103 exploded in Tarnet. Besides his work on *TODAY*, *Cosmos*, 25, was an associate producer of *The Tonight Show* and *The New Timber Workshop*. In his free time at WGHP-TV, he'd bring in everyone and everything from new hair friends and make him an integral part of the team. "With his encyclopedic knowledge of old TV shows, Ken always knew the perfect thing to say or do to brighten a situation." "He would observe until he knew just what would go best," says *TODAY* producer Steve Krieg. "Then he would slip on the tools, make them look learning-goo."

O'Donnell could also be spontaneous, as his friends' many stories attest. He once chalked scenes from "The Twelve Days of Christmas" on a sidewalk and, via another occasion, called a friend out buying a new car on the spot. At least 2 inches, O'Donnell was blue-eyed and handsome. He was also the result of frequent trips to Miller's Gym in Boston's South End—and known for his amazing abdominal apperatus. A typical lunch might be the maximum special plus an order of spaghetti. His favorite saying: Eat well, drink well, have a few friends, and pass on the rest. When he heard that the school band went on tourage every year, he took up the drums and, once enough, had the percussion section on the top ten honor roll.

Cosmos' knock for figures (as a manager) he accompanied all the students on his parents' credit cards (and him naturally) on an incoming degree from Boston College. Except for a year as a student, he worked as an accountant for almost a decade. In his free time, he wrote fiction and passed such watercolors. His life was predictable until one day in 1995 when he was held up at gunpoint in a restaurant where he kept the books.

The robbery caused him to reflect what he wanted from the future. His soul-searching led him to look for a job connected with his old love, television. He became a production trainee at WGHP in 1994, then landed a position at *TODAY* as a production assistant. His work kept him on the road 160 days a year, meeting interesting, exciting stars and keeping track of tape. "He used to joke about being a person like Mary Richards, the producer behind the scenes," says his friend William Olsen. But he was making strides, and he landed it.

Last May, O'Donnell landed in the hospital with a virus that sidelined his heart. He decided to leave *WGHP* for a less demanding job, but by Labor Day had changed his mind—to the relief of executive producer Russ Morsch. "I was very concerned that we were losing this person who really fit that job perfectly," Morsch says. Cosmos had just one on-camera position to associate producer Michael Murphy agreed.

In February, Cosmos was wrapping up the *TODAY* project in San Francisco when he was asked to fly to Asia to report for *The Tonight Show*. His friends say he was white-knuckled passengers while flying down an aisle, but he was eager to see Indonesia. The day before the crash, he had spoken with *TODAY* administrators Barbara Coray ("It was the first anniversary of my mother's death"), she says. "He called to say, 'You can get through that.' He was always doing things like that. He remembered everything." And we will remember him.

At Home

KEN O'DONNELL

ROLE AND RESPONSIBILITIES
TODAY PRODUCER & CO-PRODUCER, THE TONIGHT SHOW STARS & CHIEF EXECUTIVE ASSISTANT

HOME WILMINGTON, MASSACHUSETTS
CHILDREN DAVID & JENNIFER, 10 & 8; BENJAMIN, 7
EDUCATION BOSTON COLLEGE
HOBBIES GARDENING; GOLF; TRAVELING; GOURMET COOKING; HIKING; GARDENING

WORKING HABITS
TODAY PRODUCER: WORKS 10 P.M. TO 6 A.M.; TONIGHT SHOW: 10 P.M. TO 1 A.M.

INTERESTS SWIMMING; GOLF; GOURMET COOKING; HIKING; GARDENING

ADMITTEDLY ADDICTIVE
LITTLE DEPARTMENT STORES, SPAGHETTI, DRUGSTORES OR BEER

INTERESTS SWIMMING; GOLF; GOURMET COOKING; HIKING; GARDENING

ADMITTEDLY ADDICTIVE
LITTLE DEPARTMENT STORES, SPAGHETTI, DRUGSTORES OR BEER

COLLEGES ATTENDED

COLLEGE ATTENDED BOSTON COLLEGE
GRADUATE STUDIES LEHIGH UNIVERSITY
POSTGRADUATE STUDIES BOSTON COLLEGE

TELEVISION CAREER

ROLE ASSISTANT

TELEVISION CAREER ANDREW McMAHON
PUBLISHER/PRESIDENT OF PUBLISHER

PRIVATE LIFE

ROLE CO-OWNER

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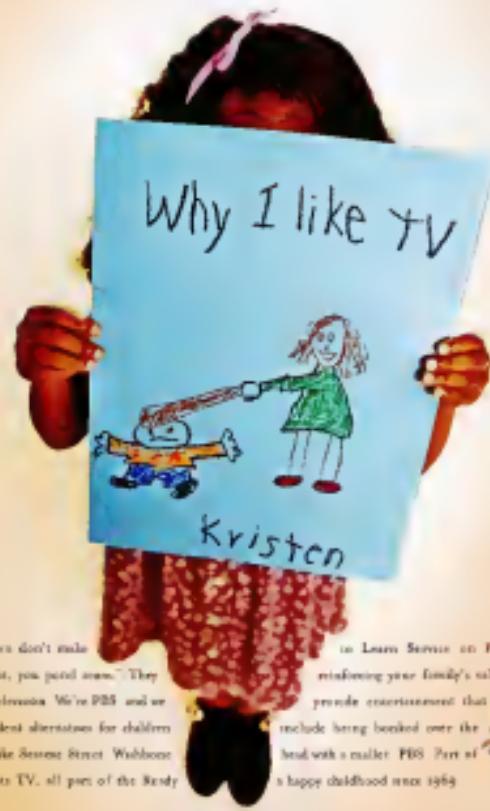
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**Treatment
Orchard**
I enlarged when I
uploaded the photo of the
writer in a trench without
any protection in "Swamp Fire"
[March/April 1988, page 88].
Occupational

Safety at Work Safety-related trench regulations require any trench more than 5 feet deep above its base to be in a safe slope or to have some sort of shoring to protect the worker. Neither is apparent in the photo. Everyone, from a multifaceted state highway contractor to a lone digger going with a backhoe, is required to adhere to these regulations.

Tony Rasmussen, Herk, N.Y.

The caption for the photo on page 88 states that the trench measures 9 feet deep but, when the photo was taken, workers had dug down to only 5 feet, says Dennis Karsca, the contractor for the project. The photo also makes the backhoe appear closer to the cameraman—when it actually has several yards behind. Nonetheless, instead of the dozens of excavations, and trench related deaths every year, we agree that safety is paramount. One reaches deeper than 5 feet when one set not far enough stable rock, the Occupational Safety and Health Administration then requires that the walls be reinforced, sloped or stepped away from the bottom to prevent a caving in. When backhoes were deeper, I put in a steel shoring bar to hold back the walls while my men worked. And sometimes, the 5-foot rule may be no longer.

Shallow trenches may need reinforcing to hold back unstable or saturated soil. (Only an expert should determine whether soil conditions call for their additional safety measures.) "The job has to be managed by an expert to stay time management," says Ted Tewdwr-Jones, an OSHA safety and occupational health specialist. "It's a extremely heavy 16-cubic foot of earth weight approximately 300 pounds. Imagine a cubic yard crashing down on you, or 5 cubic yards. That's around 3,000 to 15,000 pounds." (A medium automobile only weighs around 2,400 pounds.) Other trench hazards include

flooding, compromised air quality (from sewer or other gases), even explosions of gas line backs, even instances. A lot of technical knowledge is needed to dig a safe trench. The Old Man's contractor Tom Sims, who can place soldiers in the trench along with safely tethering to the other OSHA rules. "Sure, they sold on the cost of a job but, if the walls collapse, the doc will sue you."

Grocery Mix

I am not a homeowner and saw your [Grocery] issue recently. I am a grocery store employee and the story on how Michael [Wood] "Works" [March/April 1988] inspired me. His life seems to be all all-night drives, something worth imitating in the supermarket world.

Jeanne P. Jackson, Calais, Maine

I was more than delighted to see the article about Steve McLean! I once worked for Peoples College in Claremont, California, and through friends there met Mr. McLean many years ago. One of my greatest memories was the several hours spent in his home while discussing the order for a new dining room table. I was so pleased to learn that the wonder of his home will live on when his structure is restored. For years we worked closely with McLean, with the advent of the ProfitFirst Project:

George G. Wenzel, Belgrave, Minn.

Great Inhaler

I appreciated your article "Awards and Gold Medals" in the March/April 1988 issue. You left something out, however, and that is my inhaler. I always hold my breath when cutting treated wood and, after reading this article, I am wondering if sweating a short think would be wise.

Bruce Lusk, Austin, Texas

What makes The U.S. Environmental Protection Agency recommend wearing a dust mask "when sawing or machining" pressure-treated wood to avoid inhaling chemical fumes? (See "Awards and Gold Medals" in the March/April 1988 issue.) Mask was to buy a mask that has double elastic bands—rather than the less effective, high-friction wire band—and has been approved by the National Institute for Occupational Safety and Health. (Look for the NIOSH listing on the package.) For the NIOSH-listed, choose a NIOSH-approved respirator that has charcoal filters for paint fumes.

Be Prepared

After reading Jerome Marin Laskam's "Off the Wall article" [The Preston Owners Did What?], [November/December 1987], I put it out and learned it. The article could really have been called "Why You Should Hire a Home Inspector." As a home-inspector myself, I saw many things that just don't make sense in houses. There are not real houses left. If the buyers know some of the problems before buying, they would probably be less frustrated with the other quirks they'll eventually discover.

William Hornbeck, Guatemala, Ark.



What's New & Old

I thought I would send you some pictures of my project in Lakewood, Pennsylvania—where I have supplied all four truss jobs turned out. The owner wanted to avoid the high cost of a new garage and foundation, so I jacked up the roof of the former car barn and replaced all of the studs and plates in the walls with 2x6s. He is pleased, as am I.

Warren Antoniou, Denver, Pa.

Kitchen Remodelery

I was very surprised and pleased to see the layout of the kitchen ("Pride and Plow") in your April/May/June 1988 issue. Except for the wine cooler, this is the exact blueprint of the kitchen I have designed for myself! It's presently still待ing to finish my design (no rough work).

Lane Turner, Portland, Ore.

I have been following the Milton project on TV as the kitchen elevations on page 92 of "Pride and Plow" caught my eye—and held me—until different Massachusetts news media began reporting at the sink, looking out the window to the north and turning yourself left to see the double oven and crockpot on the east wall. Incredible! Everywhere else in the world, when you turn north and turn your head to the left, you're looking west.

Roger Morris, Arlington, Mass.

Massachusetts hasn't changed in maps, the labels on two of the three elevators

drawings are incorrect. From left to right, they should read: words, south and east.

I am annoyed by the Miller-Jones kitchen ("Pots and Pans," January/February 1994, and "Kitchen Wash Down," March/April 1994). Kitchen "experts" often place the refrigerator across the room from the stove. Not to attend Auto-Child and Messy Mouths? Not to make it the fridge way across the room? I think kitchens should be arranged so that fridges, counter space, stoves, sinks, counter space,

Donna Young, Minneapolis, Minn.

Kitchen designer Phil Margarita replies: When Young brings up a good point, in a perfect world, the refrigerator would be closer to the work triangle. But, limited by the traffic pattern (which an open refrigerator door would block) and the window placement, we decided to put the refrigerator on proximity to the eating area, a good setup for a family with kids who are always in and out of the refrigerator for snacks.

Sorry for Me

Thank you for raising awareness of automatic home fire sprinkler systems in "Sprinklers for Your Home" (January/February 1994). Unfortunately, the article fails to communicate a key reason why home fire sprinklers remain rare. Despite conflicting opinions about local code requirements, the real issue is not the installation of systems but, rather than those home owners have never even heard of them.

A survey conducted by Butler Marketing Research for the Home Fire Sprinkler Coalition (HFS-C) revealed that 85 percent of the 1,200 single-family-home owners questioned had not heard of in-home fire sprinkler systems. Or those polled. Researchers were not aware that the risk of dying in a fire is cut by as much as two-thirds in houses where sprinklers have been installed. Of the 41 respondents involved in installing a house, only one reported having learned an in-home fire-sprinkler system is an option. And after being informed of the life-saving value of this device, 80 percent indicated that, if they were to build or purchase a new home, they would be very interested in a sprinkler system.

To ensure sprinkler reliability, HFS-C urges home owners to use only certified contractors who adhere to National Fire Protection Association (NFPA) codes and standards and meet fire-safety regulations.

For further information about residential fire-sprinkler technology, HFS-C, a partnership comprising three different nonprofit organizations—the American Fire Sprinkler Association, the National Fire Protection Association and the National Fire Sprinkler Association—is offering a free consumer booklet. To receive a copy, please contact the Home Fire Sprinkler Coalition at 1 Batteryreach Park, Box 1911, Quincy, MA 02269-0911; 817-288-7280.

Glenn E. Keim, Chairman
Home Fire Sprinkler Coalition, Quincy, Mass.

Designs on Our Dreams

The emotional cottage in "Garden Change Overleaf" (January/February 1994) by Dennis Whelock really caught my attention. I would like to add to it a few plus and minus what the settings looks like and how well it integrated in a sprinkler system.

Brian Burreson, Troy, Ohio

The author of our story, architect Dennis Whelock, says he designs clean and simple plans. He does not sell them per se. If you are interested in commissioning the firm to design a house, you have a specific idea in mind, contact Dennis Whelock, Archetype, 133 Fifth Ave., 4th floor, New York, NY 10003; 212-614-5147.

On Ordering

Why do you print names, addresses and telephone numbers for manufacturers (when products you publish is your catalog) when I can't order from them? I called a number you listed recently and was informed that I had to be a business to order.

Patricia Penrose, Battle Creek, Mich.

When you call a manufacturer, it's always worth asking the marketing department for the name and number of a local distributor.

Posture

I am writing to ask how I can improve some back issues. I collect your magazine as well as religiously taping and watching your pro-

grams. There is no bigger fan than I am for the man for whom I care. Jim/Vagabond (2000) and Moonlight (April 1992). I am embarrassed that I expect more from my local supermarket. If you can help, please let me know.

Kathy Max, Roswell, Georgia, Calif.

To order back issues, call 800-898-7237.



My husband and I are big fans of the show and have been for many years. However, we thought we should visit him and wife, Dennis Whelock, in Toledo. It may take about 10 years to come—please (as we do all the work ourselves). We were really surprised to find T.O.H. remodeling a church ("Church Update," March/April 1994). I hope Mark Dennis and Karen Ann Bishop enjoy their home as much as we do ours. Thank you for all the information and inspiration you have given us over the years.

Diane von Boese, Muscatine, Iowa

Out-Door on the Slipping

I purged for my wife. I eat a "Health Diet" (2000) and Moonlight (April 1992). I am embarrassed that I expect more from my local supermarket. If you can help, please let me know.

Laura McGehee, Smyrna, Ga.

French doors—specifically designed to open out—still have a reputation for leaking. (I don't even remember flipping around a pair of swinging doors.) However, because one averaging about six feet up floor space in small houses, several manufacturers—both standard and Hand-crafted—have redesigned them for a tighter seal. We have not had an opportunity to test any of these new doors, but Hand claims that its new aluminum-clad exterior outswinging doors are the most weather-resistant patio module in its line.

Sometimes it's hard to put a label on what defines true craftsmanship.



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with a white door



Storage basket
with a woven lid

These Drill Bits

As the son of a carpenter, I pretty much second your article on corded power drills ("The Outdoors," January/February 1988). I have three questions: The caption for the "first pass-along drill" says it's from 1961 and turned at 900 revolutions per minute, but the label on the drill in the photograph says 115 r.p.m. and 1940. Is the newer one a slightly modified version of the original? Second: Was there an ultimate traditional safety feature for the electric-corded Porter-Cable model with a three-pronged plug? Last, why didn't the article mention hammer drills?

Tom Fossen, Greeley, CO

We'll take the last question first. We decided that hammer drills—which come in both corded and cordless models—deserve their own article in an upcoming issue. Quantum leap! The handle of the Porter-Cable drill Fossen mentions but is actually metal instead of plastic, isn't quite productive. As for the three-pronged plug drill, the original model (1600 rpm) is in the Smithsonian and was not available in photographs, so we chose one that is nearly identical, a 1524 model from the Fisheries Museum of Industry

Marrow Work

Considering that "Louisiana Party Tote" is the show's theme song, I'm wondering how many Louisiana homes this Old House has done.

John Bellini, St. Francisville, LA

In search of comfortable weather for outdoor work in the winter months, The Old House has taken up an old house in New Orleans (1890) as well as projects in other Southern locations including Tampa, Florida, and Savannah, Georgia.

punch list

After a hard day immediately after completing his kitchen reno construction job

pantherizing 1994

- On page 74, we incorrectly discussed the source of the dog奔命画 used on the title card. Call City/Newsman of Mountain States Graphics Inc., at 417-441-1702 for more information on the English Tudor-style crest.奔命画 (flying man) is a traditional motif of the 16th century Chinese design. For more detailed info, please see the 30-page research paper found at 10.33.107/~mccormick from Accents Lighting of Jersey City, New Jersey, 444-3211 (908).
- On page 122 of the December issue, we failed to note that the credit for the insulation room idea planned at the Kansas offices ("The Past," page 102) will go to the company model of 1979. At that time, insulation and Densher Corp. Group at 1000 East 17th Street took for the name of a local aluminum.

March/April 1994

It's What You Get! Our March/April 1994 cover picture shows Matthew R.忘却 printing a list, not checking off, and not having a hand at cleanup, Massachusetts; 781-343-0663.

Be Gracious

I am writing in regard to my update New York family homestead, which has a gambrel-roofed carriage barn dating back to about 1790. The house is the oldest one in a frontier area and is located near here remained until as well as a museum of early American life. At one time, the house and barn previously served as a general store and carriage shop along a main route to Plattsburgh, Vermont. Our family has plans to restore the property sometime in the near future. May we apply for recognition as a historic landmark?

Lynn A. Gossen, Helena, MT

For buildings more than 50 years old, three types of historical designations exist: local, state and federal. Your town or county makes local designations, which afford a building the best protection against historically inaccurate changes by future owners. For state or federal landmark status, you can contact your state's office of historic preservation. You can get the plan number from the National Conference of State Historic Preservation Officers in Washington, D.C., at 202-429-0463. The federal review process begins on consideration of maps, photos, plans and historical versus you provide for the office of historic preservation. On top of that, you must also submit entries describing the property and its historic and cultural significance.

Why be on the National Register? Federally landmarked buildings may qualify for tax breaks, grants, loans and a plaque. Most important comes from the official letter from the Park Service and being eligible to enter into the historic fabric of the federal register. Historic buildings were not built back in those days—and they don't announce themselves with signs.



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OFF THE WALL

BY JEANNE MARIE LASKAS



START SPREADING THE NEWS

Nothing warms a gardener's heart like a fresh deposit of horse manure

I recently brought Beth, one of my gardening friends, down to the barn to introduce her to Cricket, my new horse, and Saasy, the male I bought my husband for a wedding present. Newlyweds, Alex and I have settled into a 50-acre farm. We are new at the livestock thing.

"This is Cricket," I said to Beth and flipped on the light in the barn. "And this is Saasy."

"Wow!" Beth said.

"Yeah, they're beautiful animals," I said.

"Holy @#%!" Beth said, and that was when it occurred to me that she wasn't referring to Saasy or Cricket. "Look at all that manure!" she said. "This is great! This is really great. Do you know how this is going to change our lives?"

"Um..." I said.

ILLUSTRATION BY LOU BROOKS

OFF THE WALL

"Do you have a shovel? Where's the shovel?" Oh, God. "Why don't Beth crept over to her car, opened the hatchback, put down a few dozen papers of newspapers, and began sweeping manure right on top.

"Uh," I said. "You want a bag or something?"

"Pensées," she said. "The best fertilizer in the universe!"

I headed to Stacey and Cricket, both chomping at nothing as Beth continued cleaning their by-product. I felt guilty. Did they feel used?

One thing I've learned is that people can get cranky when it comes to horse manure. I've heard about people who know manure too. You soak a sack of manure in a vat of water for a few days and then, poof! liquid manure for your plants.

Now that, to me, that's going too far.

To me, composted horse manure is a gardener's best friend—although my friends would hope to see a little higher than my modest pile. Still, I understand the allure of manure because I'm a gardener, and horse manure contains the three goodnesses every plant needs: nitrogen, phosphorus and potassium. You can buy these nutrients in the form of synthetic fertilizers, of course, but horse manure is packed with organic material that decomposes into humus, the dark earth that encourages beneficial bacteria to thrive and allows and retains moisture. Synthetic fertilizer can't come close to mimicking your soil's long-term environmental plan.

So who wouldn't love horse manure? It's not gross like cow manure. Horse manure's stink has a sweet smell. A sense that evokes images of Little Joe or Tom or Lucas legally holding to checks across the pasture in the margin with the folks. A sense that takes you to a simpler time, or, at least, to a more rural time.

But still. I read about a professional perfumer who has learned techniques to create a manure-scented fragrance. Unpleasantness—or perhaps familiarity—and far surpassing encapsulated, bottling that inaneable aroma as impossible. The only way to was is was an authentic manure scent so as to rule the real thing on human skin.

People derive a lot of fun in horse manure. A few years ago, an eighth-grade student working on a science project she called fact verification of Gaia's Compostin' Manure. The experiment? To see if horse manure could teach our communities and cleanse the soil.

An adult? What you live in is pretty impressive. But still: Eddie Collins, a baseball Hall of Famer who played in the 1920s, used to rub horse manure on his bats because he thought it would keep them "fresh."

Well, he did compile a .338 batting average over 23 major-league seasons. Which you have to admit is extremely impressive.

Bearish? There are folks in Maine who hold no regard Harry S Truman Master Peeling Contest, so named because Truman liked

to sharpen his apples' skins at "some moment." Events at the annual Harry S. Truman Master Peeling Contest include the gardener's spud, which contestants are judged for evenness, neatness and speed as they distribute a wholebox-worth load of manure over a measured plot. The farmer's spud is the same except that contestants have to use up an entire bushelload of the stuff. In the breaker pitch, the person who tosses the most manure onto the broken wood.

Auxiliary is a big, big word when it comes to manure. This much I understood.

"Which one," I say to Harry, who is eating, her evening grub. While she and Cricket chomp, Alex and I do our own chores. Some times I use the wheelbarrow, and other times I just go wild and haul the manure scoop by scoop, hoping most of it lands in the designated refuse area. It depends on my mood.

Sony and Cricket produce a heapin' wheelbarrowful of manure every day. And that's just in the barn. So not counting the manure they produce out in the field because that is not my responsibility. My job is to find a place to empty a heapin' wheelbarrowful of manure every day.

"We're down to these mountains," I breathlessly say to Alex.

"That's better than few," he says.

We have special composted manure we virtually never throw bad and fresh flower bed we can imagine. We spread it on our vegetable gardens. We mulched a grove of trees with it. We cleaned acres of sandy grass with it.

And we still have those mountains of manure outside our barn.

"What are we going to do with all this stuff?" I say to Alex. Suddenly I begin to understand the reason of manure-peeling contests,

manure-related manure projects and manure tea. A person surrounded by the much manure suddenly gets inspired.

"We think about fresh and healthy for the soil! We think about all our city friends and all their city gardens and all the money they are wasting on inferior fertilizers."

"Keyhole lesson moment?" I say to Alex.

"They did," he says.

There's when we get the garbage bags.

Later, when we've cleaned up for an evening out, we head to a housewarming party for Nancy and Jack, two of our city friends new to gardening.

"Here you are," I say, all happy with our clean gift.

"Your parents will love that trash," Alex adds.

Nancy is smiling—but in a more confused than happy way.

"Now, be advised," I say, "that there is a little bit of difference between the constancy of horse manure and manure."

"Manure?" Nancy says. She seems to be waiting for someone or of punch line.

"The pellets are made manure," Alex says, "and the loose stuff is horse manure. It's all the same to your garden."

"Pellets?" Nancy says.

"Loose stuff?" Jack says.

You can tell that Nancy and Jack do not get it.

"Manure?" Nancy says finally. "You brought us a bag of manure?"

Alex looks at me. I look at him. In his eyes, I see the truth. We definitely should reconsider my mother's birthday present using in the trash. ■

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(extras)

A Fungus Among Us

A desk that never needs to be oiled or varnished? A picnic table that stands up to summer sun and winter snow without a splinter? Wood-polymer composites known as plastic lumber looked like the answer a few years ago. The material supposedly resists rot for at least 10 years because the wood fibers that make up 50 percent or more of its content are protected by a moisture-resistant coating derived from recycled grocery bags, milk jugs or other plastics. So imagine the surprise of two wood-preservation scientists at their day off from a conference in Florida last year when they headed to Everglades National Park and, expecting to find ultragreen and eggy, instead discovered an inch-wide fungus growing on boardwalk rail ends made of plastic lumber installed in 1994. Leading mycologists say fungi find only on surface dust and pollen, not the plastic themselves. But skeptics such as Thomas J. Shadley, director of Rutgers University's Plastics and Composites Group and author of dozens of papers on the topic, says there's not even nearly so. Even low-swood content propylene plastic lumber, he says, "if you want to put something outside and have it not degrade, you don't want to put wood in it. Wood always wins."

Manufacturers say that a similar fungus found on plastic lumber in the Florida Everglades is only a surface infection, but some scientists say the growth may indicate deeper rot.



Wundertools

European manufacturers started some remarkable innovations this year at Internormatic (Glasgow, Scotland), the annual springtime marketplace tool and hardware show in Coburg, Germany. One German company showed off a circular saw that slices cleanly

through metal materials without sparks or noise. Two notched-tipped blades rotate in opposite directions, preventing them from hitting a single blade



Power planer: Recently invented on the market in the United States from Germany.

Another German innovator presented a power paint stripper that slices off an adjustable number of layers and whisks the debris into an attached vacuum cleaner. A cutter head with replaceable blades spins horizontally, clearing a 3-inches depth. After stripping, new hammer drill bits that cut through the instant a bit scratches metal pipe or wiring, ending the nightmare



Hammer drill: For sale in the United States this fall.

that homeowners face when they pierce walls without knowing where's hot or cold.

“
Your mind is like a spa. Leave the entrance flap open so that the fresh air can enter and clear out the smoke of confusion.
—Ovid Fuchs, New York
“

PHOTOGRAPH BY ROBERT MICHENER; DRILL: KEN COOPER; SAW: INTERNORMATIC; DRILL: KEN COOPER; SAW: INTERNORMATIC; DRILL: KEN COOPER; SAW: INTERNORMATIC

A circularly-cut tool can prepare insulation flaps that traditional blowtorches cannot



Ring of Fire

Many home owners sweat it out when sweating copper plumbing. Holding a 3,500-degree propane flame in a cramped space, inches from flammable material, requires the nerves of a surgeon. Two tools can ease heart palpitations by confining the heat source to a tight area, thus lessening the risk of an errant spark igniting an inferno behind the walls. One is a clamp-style blowtorch that divides its flame among six small jets as it encircles a pipe. The other, an electric soldering gun, uses low current to fuse pipes, so there's no open flame at all. The pipes will never know the difference.



Wiggleheat 115 volt AC power is transformer-ready controls mean dual temperature control over 1,000 degrees Fahrenheit at the contact tip of the cold-tipped gun.



WEB

For anyone
yearning to
move to a new
home, a virtual
walkthrough
exists on the
Internet.

www.realtor.com

More than a consumer-oriented catalog, WebSite, gives users a sense of a town before they lead-up the moving van. Type in a prospective area address or your city and state, then let colorful computer graphics map out neighborhoods, playgrounds, schools and schools at the user's disposal. Callaway offers mortgage packages and financing costs, and even lets local cable-TV providers integrate a new customer.

www.realtor.com

Click on a globe to see a detailed perspective city, and find lists of residential areas, schools, hours of worship and agencies for various and businesses. Click on a gridworks icon for family tree research resources. On personal items from restaurants, down-powered cars to sinks to prevent fires to prevent roof damage, book reviews. Global realtors can go to an international real-estate link for the scoop on places from Argentina to Vietnam, plus fully functioning agents in 100 countries.

www.realtor.com

More than a consumer-oriented catalog, WebSite gives users a sense of a town before they lead-up the moving van. Type in a prospective area address or your city and state, then let colorful computer graphics map out neighborhoods, playgrounds, schools and schools at the user's disposal. Callaway offers mortgage packages and financing costs, and even lets local cable-TV providers integrate a new customer.

Stamp of Approval

When a citizen's committee designated Frank Lloyd Wright's 1909 prairie-style Robie House for a 1991 32-cent stamp, Wright became the most honored architect in the history of the U.S. postal system. A 2-cent stamp, based on a drawing of the master with his Solomon R. Guggenheim Museum in the background, was issued in 1964, seven years after his death. Then in 1992 came a 20-cent portrait of Fallingwater, Wright's design for department-store tycoon Edgar Kaufmann near Mill Run, Pennsylvania. In casting the house tribute—available on a sheet with 14 other classic American images

from the early 1900s—writer stamp artist Richard

Wildrop relied on posed photographs. However, he could have chosen to draw Little House from real life: The house stands unchanged at South Woodlawn Avenue and 56th in Chicago's Hyde Park section. When the Chicago Theological Seminary, which used to own the historic building, considered demolishing it for a new dormitory in 1941 and again in 1957, Wright successfully pursued the decision.



Beyond the Box

Stacked in a clear acrylic stand, a set of progressively sized blocks resembles a colorful diamond-shaped perfume balanced impeccably on its culet. Knock over the stand, and the plastic construction disassembles into 11 rhomboid diamonds and four white octahedrons. Resolved wings and extended corners wedge neatly into each other to form a colorful frog, a skyscraper, a candy-colored robot, Frank Lloyd Wright meets Mondrian.



Big Bad Bowl

After investing in a steep influence lifting away shell and closet with countless vessels for salads, potato and bean dip—many woodworking hobbyists have entered the plowing of jewel nests. "We beg pool. No more bowls!" the philistines, how to make them appreciate the learning blossoms? Perhaps an entry in the Guinness Book of World Records. Since 1990, the record for the world's largest wooden bowl has stood at 5 feet 1 1/2 inches in diameter, 8 feet 7 inches tall and 10 feet in circumference. Now there's a new bowl on the block. Last fall, American Woodworker magazine's staff attached a 6,000-pound chunk of found Sitka spruce to a \$10,000 custom lathe. Then, British horticulturist Stuart Mortimer went at it with an 8-foot gauge. After six days and 3,000 cubic feet of shavings, he produced what the recordbooks keep in the world's largest bowl: 7 feet 8 1/2 inches in diameter and 8 1/2 feet tall with a circumference of 23 feet 7 inches. The beast weighs a mere 200 pounds. Filled with bean dip, it will, of course, weight considerably more.

Illustration and photograph courtesy of Frank Lloyd Wright Foundation; photograph of rhombicuboctahedron by Michael S. Lewis

Damn the Mosquitoes

After months of soppy weather courtesy of El Niño, much of the country will be hosting a super influx of mosquitoes this summer. Step one. Zap the skeeters where it hurts by draining their breeding grounds—any place where water collects, such as open boats, wading pools, clogged rain gutters and saturated flowerpots. Next, use biological laricides such as

fish repellents combine herbs such as neem leaf, basil and thyme with citronella and tea tree oil for oil-based, fogless alternatives to ready-made repellents which are often as noxious as they are efficient.



Altoze (a synthetic hormone) or bacterial spore crystals (known as b.t.i.) to subdue larvae found in ponds. Or drop in a few

Gambusia affinis (guppylike creatures commonly called mosquito fish). Of course, once mosquitoes take to the air, other defensive tactics are in order. Thwarting bloodsuckers doesn't have to mean slathering on topical concoctions of diethyl (N,N-diethyl-metha-(toluenda)), folk concoctions of herbs and oils can work too. Netted clothing is a less gooey option, although hardly

fashionable for backyard barbecues. For those occasions, incense coils and citronella candles provide inconspicuous protection within an 8-foot radius on still nights. Or install a few bat houses to encourage nature's own exterminator. Brown bats live all over the country and can scarf down 600 to 1,000 mosquitoes an hour.



When bats are active, set up a bat house with lots of chambers for perch to roost in.



Dim amphetamine and ephedrine capsules to stick like blotting paper inside single-walled plastic made of nylon netting



Immobilize coils that emit the natural essence of pyrethrum flower extract mosquito-as well as other insect pests.

Speculated
Worldwide
Builders of
Adventure
Machines.

Enlarge your neighborhood.



Go Farther

The new 1998 Trooper.

The real "Spruce" and "Maple" and "Chestnut" should be just as familiar to you as the streets that are named after them. The thoughtfully refined Trooper will help you find them. Its new Torque-On-Demand® traction system assesses varying road surfaces and swiftly and intelligently directs power to the appropriate axle; simply put, the Trooper thinks for you. With extensive improvements in functionality and a more powerful 215 horsepower engine, the new Trooper will take you out to see where your street gets its name.

extras

EVENTS & APPEARANCES

STEVE THOMAS
• June 13–14—Saratoga
Hot House Services
Saratoga Springs,
N.Y.
38 W. 3rd St.
Dental cell 5400
Reserve, 232-6411

EVENTS
• June 13–14—Saratoga
Home Show, Mayors
and Honorary People,
Mohonk, Ulster Co., N.Y.
38 W. 3rd St.
Dental cell 5400
Reserve, 232-6411

• June 29–July 3—New
House Improvements in 20th
Century America
Expo, National
Building Museum,
Washington, D.C.
For details or to
order The Old House
product
Brochure and
Catalog, call 800-330-
1912, 202-275-2544,
ext. 2399.



Current News

National Electrical Code requires new houses to have ground fault circuit interrupters (G.F.C.I.s) built into a central circuit breaker panel or into outlets that are likely to serve appliances and tools—outdoors or in garages, kitchens, bathrooms, crawl spaces and unfinished basements and within 6 feet of wet-bar sinks. The devices monitor current flow. If they detect a leak, indicating that some volts may be heading for an exposed metal part of an appliance or tool, G.F.C.I.s trip the flow before anyone gets electrocuted. Unlike regular fuses or circuit breakers, G.F.C.I.s react to tiny amounts of current. Outlets in older houses should be rewired with G.F.C.I. receptacles in code-designated locations. But for appliances or tools used elsewhere or for outlets awaiting conversion, new plug-in G.F.C.I.s offer protection. These devices require three-prong outlets, but a grounded two-to-three adapter won't interfere with their effectiveness.



Photo by Jim Murphy
Courtesy of the National Electrical Code



Hipsters

Bring down when one has a million-square-shelf into the wallboard of one's pants has never going unnoticed. But ensuring the seemingly square-in are already overflowing tool belt: inevitably means losing it. To solve that problem, This Old House contractor Jim Silva packs a hard plastic holder on his tool belt not by two cartridges in Bend, Oregon, the necessary holds not onlyaffen-squat squares but either a square or a combination square simultaneously, as well the other Silva Brothers cameras have stated themselves accordingly.

POCKET POWER

When the going gets electric, the pros get out their trusty little handbooks and start flipping

Pocket Ref: The ultimate little black book packs the punch of an otherwise loaded with implementation hints helpful and disaster-augment codes, measures sorted by density, drill and cutting techniques. Need to know the specific gravity of different materials? It has, along with conversion factors for more weight and measures than you can shake a stick at.



Plasterers Handbook
Basic plastering, plaster
handbook. An on-the-job
reference for plasterers
and other trade crafts
In-builders processors
section includes green
masonry backerboards
basement floor
a finished home
splicing net
draining plaster
and definitely not
for the faint of heart.



**Vent Pocket Guide for
Rustoleum and Contractors**
Check out this cut-of
page guide, which provides
recipes for common, a
blended primer, chipper
in rough and finish application
and an illustrated guide
to common molding profiles.
Although written for pros
it's also an extensive and
helpful resource for do-it-yourselfers.



Some of old architectural remnants find
a final resting place in the American
Art Museum in upstate New York.

out of their work) and, finally, American Art Recovery Society, incorporated as a nonprofit organization in 1938. Nearly 20 years and 4,000 salvaged pieces later, Karp organized a 10th-century general store in Charlotte, New York, and called it the American Art Museum after the European Renaissance masters who created the work he now sought. The one-room space holds some 250 of his treasures, ranging from Egyptian faience and ceramics to bronze casts and a noble horse head. Standing next to many of the savings are tilted slightly to convey how they were originally meant to be seen from the streets below.

Heavenly Angles

If God is in the details, everyone must be a tool kitchen神。For the deer to look good, heads of sawing-tooth rectangles must be cut precisely to fit flush against cabinet backs and mitre joints. Although pentagonal tools, these miter cuts rely on carefully calculated angles. In addition, carpenters often need to round off the flat surfaces of the tool heads to make perfect edge cuts using a plier—and less expensive—version of a professional angle square. Slip the tool into place; maggie the mitering angle bar against the miter joint as another orientation, then tighten the head. To replicate the exact angle and location of the cut, simply place the tool against a track the end work accordingly.

Richard Martinez,
A Good Vision
Photo by Steve Liss



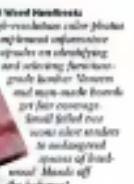
UNSUNG TOOL

Pipe Crimper

When properly fitted, the joints of single-wall chimney pipe slide together perfectly—they're airtight. But if the dimensions of both tubes measure virtually the same, slipping one place inside the other can be misleading. A pipe crimper can make the work

easy. At first, the tool looks like a baseball bat. One handle is fixed, while the other is hinged. The hinged handle—the tools are actually ten-sided to cut marks. Put the crimper on the flat or curved edge of a piece of sheet metal, and squeeze. The teeth clamp two nice, opposite sides. When tightened all the way, like a pressure-fit end of a chimney pipe or heating duct becomes a snugger sneller in diameter, just enough to fit snugly inside an uncrimped pipe.

**The Pocket Ref:
Contractor's Helper** An
easy-to-navigate spiral-
bound format allows
readers to fold back the
pages to a single column
of project notes, formulas
and reference tables.
Green Wood
Painting Systems
Paints for exterior
surfaces. Check out
this cut-of page
guide to common
finishes, such as
stain, paint and
varnish. The
decorative, mid-layered
graphic design works
depending on coverage
and thickness of paint
and the nature of the
substrate.





THE DARK AGE IS OVER.

Under the dash, in the crawl space, behind the stereo, in the closet, way back behind the furnace, or under the eaves on the back porch. Now, when you need to tighten a loose screw hiding in the shadows, you'll be ready we put a light on the Craftsman rechargeable cordless power screwdriver.

CRAFTSMAN

MAKES ANYTHING POSSIBLE

© 2003 Sears, Roebuck and Co.

CUTS BOTH WAYS

Band saws shine on curves and straightaways



Crafted with an array of blade widths and tooth types, the band saw makes fine curves and bevels easier and cuts through thick logs with rapid motion.

I met my first band saw at boat-building school. It stood tall, sonar in the center of the school's barnlike workshop, a ½-ton tower of cast iron surrounded by unfinished doors and pentagonal, the soft sounds of sliding planes and tapping mallets. Over the cumbrous saw's wear-polished table, one apprentice gently coaxed a piece of mahogany into a moving blade thin as a ribbon on a birthday present. A nudge to the left, then to the right, and a square board became a sweetly curved teakom. Behind him, clutching pieces of wood, other would-be-builders waited to work some band-saw magic of their own.

My instructor pressed the sturdy machine and said, "If you're going to build boats, you'd better learn how to use a band saw." I did learn its ways, by pushing over board feet of stubborn oak, scented cedar and plasters fit through its relentless blade than I care to remember. At apprenticeship's end, I could reuse thick, rough planks into thin boards, make perfect no-gap angled dovetail joints and sculpt square stock into beveled-edge curves.

For band saws are more than tools for building boats, as I discovered later working as carpenter, cabinetmaker and furniture builder. Band saws offer a combination of speed, precision, safety, efficiency and quiet unmatched by any

PHOTOGRAPH BY ERIC BARK



The blade guides for these rating encourage flat, precise cutting. When cutting thick materials, the blade should always run through or above the thickness of a dollar bill (far right).



A stiff finish prevents snaking on the wheel's surface. To prevent the blade from getting stuck and vibration, the front blade should be ground to within .002 inch of perfect roundness.

This 452-hp model from Italy has a 4.425-foot-wide blade at nearly 4,200 feet per minute. Maximum cut width: 15 inches. Max cutting height: 12 inches. The capacity: 17 inches.

1. Wheel guard

2. Blade guides

3. Power belt

4. Blade drive system

5. Power belt

6. Blade

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FLOOR SAWZALL



ALL-METAL GUARD

Aluminum wheels 24 inches across make cuts up to 2½ inches wide possible. A blade guard slides up and down as needed for easy adjustments. Maximum blade width: 5 inches. Maximum cutting depth: 6½ inches. Motor: 1½ horsepower.

NO, IT'S NOT BROKEN

Unlike hand saws with ribbon blades, this model has a 421-tooth-saw-like work surface due to technology in the wheel's pores. Maximum cutting depth: 6 inches. Throat capacity: 11½ inches, or 14 inches at 30-degree bevel cut. Motor: 2½ horsepower.

BENCH-TOPPERS



1. THREE-WHEELER

An older (the third-wheel) edition cuts up to 10 inches wide with wheels 6½ inches in diameter. Maximum cutting depth: 15½ inches. Maximum blade width: 5 inches. Motor: 1½ horsepower.

2. FULL-FEATURED MITER

A mid-range model allows precise, smooth adjustments. Throat capacity: 12½ inches. Maximum cutting depth: 16 inches. Maximum blade width: 6½ inches. Motor: 1½ horsepower.

3. FASTER MITER

The direct-drive motor has no belt to slip or wear and throat capacity: 10½ inches. Maximum cutting depth: 15½ inches. Maximum blade width: 5 inches. Motor: 1½ horsepower.

To cut stock as thick as the pads will allow, a band saw must have sufficient power. An underpowered saw can slowly drag across the blade and motor, which burns the work. It takes at least a ½-horsepower motor to cut cleanly through 3 to 5 inches of wood. Norm's 14-inch has a ½-horsepower motor, while the newer machine generates nearly 3 horsepower.

The key to a band saw's performance isn't horsepower or cutting capacity; it's the blade. Off the machine, in fact, flexible cables aren't capable of slicing much more than steel bend. When tensioned on the wheels at least as tight as a piano string, this strip of metal—half the diameter of a dime and moving 3,000 to 4,000 feet per minute—can cut through almost anything.

Widely dimensioned band saws have a blade core. The narrower it is, the tighter the curves it can make without snapping. A ½-inch blade, for instance, can follow a 14-inch radius, while a ¾-inch blade can only manage a 3½-inch radius. And ¾-inch blades can turn as sharply as a scroll saw but with greater speed.

Wider blades, from ¾-inch to 2 inches or more, cut fast and straight, easier owing and surely faster. Typically used for resawing thick boards, these blades require saws with wide wheels, powerful motors and heavy, stiff frames to withstand the high tensions that keep blades in concert.

Those who want to make curves and then go straight should master the trick of changing blades or switch to a saw that can both ways fitily well—¾ inch is a good compromise. Norm resolves the curved-versus-straight dilemma by having two saws:

"Uh, Oh. Uh...wow."



Two ways to "wow" them this Father's Day.

"OH WOW!"



Zircon® 10"
Band Saw. See-through walls. Superior tools. Superior tool selection.



Zircon® 4½"
Band Saw. True-tracking technology. Resawing. Up to 10" deep.



Zircon® 14"
Band Saw. Bi-directional tape measure with built-in digital voice recorder.



LaserLevel™ 16'. Integrated plumb line. Electronic level mode. Ready-to-Align.

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When Norm Abrams installs a fresh blade, he first rotates its frame to adjust only about $\frac{1}{8}$ inch when pressed. While slowly rotating the top wheel with his hand, he then rotates the tracking screw or nut until the blade runs a straight line with no hint of wavering. After adjusting the upper and lower blade guides, Norm places a small square square on the table and against the blade to check whether the blade is level. Last of all, he holds a file against the back of the moving blade to remove any burrs that could damage the wheels' rubber tires.

**ON A SQUALL**

Before he cuts tight curves, Norm makes a four-sided cut from the board's edge, roughly perpendicular to his layout line. As the blade crosses through the curve, notice stock comes off in facets rather than in one big chunk, and the blade separates the trim without denting. If the curve is too sharp, Norm will change to a serrated blade. For a smooth, apple-peel cut, he applies steady pressure to the work and tighten the blade initially; if it starts to waver or veer off course, he slows down

**STRAIGHT BLADE**

When resawing thick stock into thinner boards, Norm ensures the straightest possible cut by using the sturdiest blade the band saw can handle. For this job, he attaches a four-blade diagonal ripping fence to the table and makes sure the fence's top edge is perpendicular to the table, the right distance from the blade and exactly parallel to it. The band saw's downward-swinging blade allows him to saw just as far as $\frac{3}{8}$ inch without the back-bash or saw-up cuts associated with table saws.

**NEAT NOTCH**

A sharp gauge makes accurate and notches easy and accurate. Norm simply sets the gauge to the cut angle, adjusts the height of the blade guard to just above the wood surface and anchors the fence behind the gauge—a good habit that keeps fingers out of blade range. When he wants to make identical cuts in separate pieces, he stacks the two pieces and clamps them together with double-sided tape so they won't shift during cutting.

a curve cutter, which spans blades from $\frac{1}{8}$ to $\frac{3}{4}$ inch wide, and a riving anvil, which has a carbide-tipped 3-inch blade.

Band-saw blades are usually tightened to 15,000 pound per square inch, although tensions up to 27,500 psi may be necessary for extreme. Woodworkers who sharpen their own blades compare the tensile of a plated blade to a tuning fork or harmonica's pitch. Bladex at 15,500 psi makes an F; those at increasing tension produce a G-sharp.

It's commendable, but the lesser tensile per inch, the finer the blade will cut. Big saw blades might have two or three tpi, while saw blades for softwoods may have 20 tpi. A good frame rule is to use cross-cutting blades on stock and sparsely toothed ones on rails. Most woodworkers use blades with four to 10 tpi.

Despite their shortcomings, band saws are not perfect cutting tools. They aren't portable and can't make plunge cuts. But they do multiply the amount of work that a small shop can handle. And the smoothness of the sawn blade shearing through stock—it's the most thoroughly hypnotic way to part wood. ■

**Bendy Blades**

1. Circular steel is the oldest and least expensive blade metal. Fine for cutting wood, but glued veneer and plastic don't bend well. Won't cut steel.

2. Stainless blades for cutting metal have tough high-speed-steel teeth joined to spring-steel backs by electron-beam welding developed at NASA.

3. Carbide teeth bonded onto spring-steel stay sharp longer but are expensive and brittle. Not meant for metal cutting.

4. Serrating blades are smooth otherwise unnotched curves in metal cuts.

5. Teeth made of an alloy of carbide, nickel and cobalt are not as durable as carbide, but they are less likely to break and can be re-sharpened. A favorite in sawmills.

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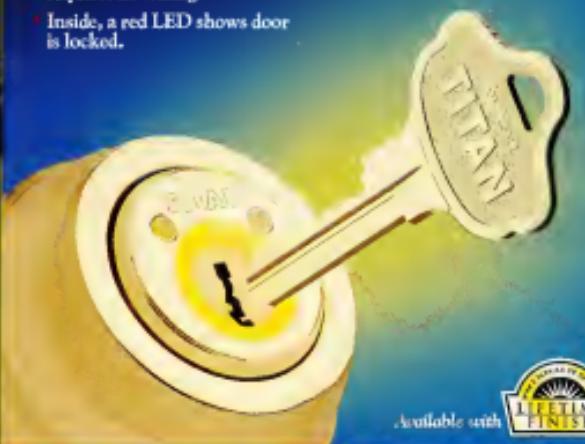
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BRING ON THE BRUSH!

Machetes tame the backyard jungle

like one of the outnumbered Spartans who held the pass at Thermopylae against the army of Xerxes, I stand alone with a naked blade to oppose a blackberry empire creeping uphill into our garden. Thousands of dark serrated rose 10 feet in the air, blocking the sunlight. ("Good," said the doomed Leonidas, told that the Persian arrows were so dense that in flight they made dark clouds. "Then we will fight in the shade.")

With 2 or 3 feet of cold steel in my hands, old warrior instinct take over. Wading into the thickest clump of vines, I hack them down until sunset, sweat dripping off my green skin. They pick me a thousand times, but I'm wearing gloves and a long-sleeved shirt for extra armor.

Let imagination off its leash, and soon a sweaty chore becomes a real rite. In my case, it harks back to the play of childhood, with my beloved first machete. It was an LC-14-B survival tool, World War II military issue with safety shoe, leather grip, cutlass-style

**Wicked Blades**

1. *For machete heads:* I have a 26-inch machete blade with a curve on the back of its arched head. A 26-inch cutting radius! **2.** *A come-happy blade:* I have a come-happy blade or come-pissed-blade kind of machete blade. It has a wide, wavy kind of edge profile. It cuts a wide base on my log for stacking wood, cutting on the side. Weighs 3½ pounds.

3. *The all-handled machete:* It's the Army's

guard-and-evil-looking brush-hack. I was 12. "Always control the blade," my father commanded, teaching me proper machete technique. "And wear boots, not tennis shoes. Watch your stance. If you can't pierce it, poor mother will kill us both."

Gave a half a sword, a Southerner and something to chop down, if he survives, he will forever dull master of his own universe. In my eighth class, Kid Conan was now armed and dangerous, and sophomore matrons got closer to the teeth. Now that I had a way to defend after school, we grade day-endemic. Dad was a genius, even if his punctuation was off-kilter, because of his lack of education. An all-handling machete had a guard and a hilt and a sheath for full blade. Weight: 1½ pounds. **4.** *A straight edge:* I'm a fan of the cold-fusion machete plane. It's a straight edge with a curved hilt and a straight

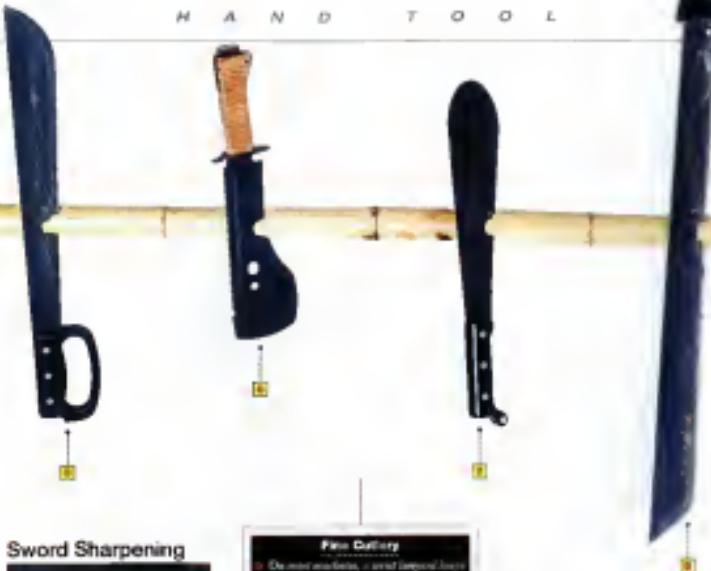
blade, blades ringing cheerfully as they slice through metal. And in the Caribbean forest, machete-wielding laborers sculpt raw after rows of energetic swingings into perfect curves a few months before the holidays.

Machete comes to us a derivative of maces, which is derived from the Spanish word for mace/hammer. Early machetes probably began as peasant cutlasses and became all-purpose tools on plantations and in revolts. Eventually, the U.S. Army adopted them for jungle warfare.

Modern machetes range in size from the traditional 26-inch Caribbean camp-cutters to the comparatively small gardeners' versions such as the bentwood hilt and the tiny leafie. Some types have an integrated bush hook at the end to cut on the pull stroke, also known to swing hard and never to cut after cutting.

Grasp a machete like a tennis racket. Just be sure to lock thumb over fingers because, unlike a tennis racket, a machete is sharp enough to sever your leg on a bad swing. Although a machete can chop down a tree with repeated hacking, it wasn't designed to

Illustration: Michael Sutty

**Sword Sharpening**

1. *A sharp machete blade into mind,* but a dull one can become off and into you instead. Professional macheteers make an edge using only a flat double-sided file, while others push toward the edge in long diagonal strokes. Amateurs should do the same, while wearing leather gloves to avoid striking digits. But a machete will cut better and stay sharp longer if the unsharpened grousers left by the file are polished out with a medium-grit diamond. Lay the blade on a flat surface; slowly run the stone at a slight angle from the heel of the blade to the tip. Push away from the edge with light strokes. Some tension along the edge afterward on Scotch-tarnished tool steel. Biangular machete angles are 90 degrees edge that makes the first few cuts incomparably easy, but the edge itself rather quickly loses the tool's edge for a really blood-thirsty tool: the straight run.

2. *The most machete:* a sword sharpening device, which holds just barely, but the handle-containing carbon handle, is used in the blade with three intersecting axes, nearly eliminating the chance of a complete shattering from over-grind. Weighs 1½ pounds. **3.** *The multi-angle-machete:* similar to the previous, three planes to go for, either one plane, or all three, all equally necessary, and placing either end first. The blade is sharp, a curved edge, a pointed end, and straight edge and pointed. Weighs 2½ pounds.

4. *A reinforced straight edge:* a machete that can cut extremely well, yet it can't catch on a log. Good for machete heads. **5.** *The machete-hunting blade:* 16½ inches. Very convenient all set up and out of a sheath. Not much use in a garage, though. You can find one in India, where it's called a katar. Weighs 3½ pounds.

6. *Keep your elbow bent:* bend slightly throughout the swing and your wrist perfectly straight. A short, controlled chop is much safer and less tiring than a full swing. Never ever swing lighter than your head. It's wise to wear a glove on that live hand. With two gloves, you'll avoid blisters, and protect your fingers during real surprises (see sidebar). Wear a machete cloth at dirt and plant blood, and no other one. Then keep it in a sheath until the next battle.

Machetes don't kill people, at least not on purpose. Many years back, I was chopping brush with a crazy young farmer on his forest—doves were in the middle of a field. He was an expert of the machete, but was also an idiot. He cut a dove in half and severed a side nerve. Weighs 3½ pounds.

He awoke to safety advice, so I cleaned the severed dog safely to a distant tree and gave Jungle Jim plenty of directions. His fucking Coorgi-explorator stroke had too much before-through, and he swung just as wildly when off balance. Somehow he managed to avoid injury for the last bout, but eventually the machete deflected and sliced into his calf muscle. After his trip to the hospital, his glibly 17-inch machete made me recall my dad's advice: *Always control the blade.* ■

Nowadays, with so many motorized gadgets for log grinding and branch decapitation, few borneown study the machete, although carried by hand a good exercise and pollution-free. Near the city, choppers will end chain saw road, but our here in rural Oregon, simple country folk stay braves and brushwood, with their

FIRE IN THE PIT

Building an altar to outdoor cooking



When the barbecues flare up each spring and the scent of charring seasoned meat fills across America, it's a wonder how vegetarians keep their resolve. Even a burger broiled on a rickety hibachi has that primal, irresistible hunter-gatherer allure and a ring of genuine alfresco hospitality. But Dr. Paul Gotsik's family wanted something more than a primitive fire pit to grill the day's catch. So under a gazebo, beside the swimming pool, along a yacht-crowded waterway in Jupiter, Florida, misses Chalk and Paul Palazzo gathered the tools and materials they needed to build the Gotsiks' cookout spot.

For those who can afford such luxuries, there's no denying the appeal of these massive monoliths to the joy of cooking outdoors. They provide broad expanses of counterroom to set down a plate of burgers or basket of beans. Their supporting pedestals, whether built of brick or block, make a perfect all-weather storage space for the axes, tongs and other barbecue accoutrements. And unlike those portable flame-cookers that require bottles of propane or bags of coal-dust briquettes—both of which have a way of running out when most needed—stationary grills can burn natural gas.

BUILT A STONE (above) in Florida, a massive barbecue is the centerpiece of an enclosed Mason-Circle-Patent barbecue, mounted like a stage, built around a large rectangular block and a water-cooled firebox.

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Always use care before entering a desert. It is also illegal to collect scorpions. Jeep is a registered trademark of Chrysler Corporation.

PHOTOGRAPHS BY ERIK BARK



1 The first rule of masonry—make sure that everything is p-holed and mortared—dictates. Jerry Clark, Palermo's master mason of 40-plus years, says he checks the barbecue's mortar around 4-foot intervals to see if the blocks are level.

2 By the end of the first day, the 8-foot long prefabricated stone pier, or footer, is up, along with 10 pieces of block—both 4- and 8-inches thick—and four bags of mortar.

3 John Maloney, from 7-7-7, does the rest for the barbecue's construction at a grill. "I break them into thousands of pieces, then I pour concrete between each block. He uses the upper half of the pier, leaves out the middle, and it's a double pier with a dry diamond block. This block gives the grill access to the gas line. It's well-lit and opens a considerable space to accommodate the cook."

4 A final consideration is where the site is to be and its access. But nothing can beat the luxury pictures. Clark waits for the mortar to set, then hangs a silicon sealant a foot off the grill's surface. In this case, he leaves continuous shallow pockets, levels them to the propane tank's height, and then, using thin felt rolls, strips off the excess mortar so the propane tank's daily After-bombing, he will cover the rolls, fill the crevices and get ready to roll.

5 The brutal heat of concrete blocks disappears under a refined covering of travertine tiles, bonded to the rounded pier surface.

6 The next day, after the adobe sets, Clark grinds the site and prepares a ledge. All that remains is for the local gas company to hook up the grill and for the owners to go shopping for steaks.

For their barbecue, the Gorkins had a natural-gas grill, 6 feet in circumference and two storage compartments, as well as a storage section to keep chicken frosty and a side. "This is not a barbecue, this is a barbecue," says Larry Maloney of the Fireplace & BBQ Center at nearby Coral Springs and the designer of the "Gorkin" project.

Under the Gorkins' guidance, the Palermo-builders could have been building a miniature house, judging by the multitude of stone and pipe poking out of the garage base, electric wires for the fridge and a glove, water-supply and drain lines for the sink, a natural-gas line for the deep-grill. The barbecue encloses all these essentials in a single, 8-foot-tall, 2-inch-thick, 10-block wide, 10-block high, travertine block and pavers covered with travertine tiles, the cooking area held in by a granite top. The barbecue encloses all these essentials in a single, 8-foot-tall, 2-inch-thick, 10-block wide, 10-block high, travertine block and pavers covered with travertine tiles, the cooking area held in by a granite top," Maloney says. "But those don't last in the Florida climate. Half our business is ripping them out and replacing them with concrete." He lacked a loose block. "There'll just forever be a masterpiece."

To avoid blocking the barbecue's water view, Maloney caressed the low ledge between two columns on the garage's north side. In a

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couple of hours, the Palmetto brothers stacked the 16-inch-thick block into a well 35 inches high, tall enough to provide a 16-inch backburner behind the 39-inch counter. They wouldn't be compensated, but the Palmettos, and their sons, are the ones who will be doing all the work.

If life seems too short for building a fire and smoking for weeks, the quick fix is a gas-powered grill. But where's the fun? The first decision: what size to buy depends on how many people you expect to cook for. Home-smack says 10 feet and four seats you want to spend. Gas grills range in utility from 24 to 125 inches and in price from a few hundred dollars to \$13,000. Quick fix for a tag of the day: consider built-in barbecue, including an infrared rotisserie.

These ready-made units are grille boxes with infrared radiant gas burners or a propane LP propane gas burner. Their burners are rated at 10,000 BTUs per burner or the same power for grilling. "The higher the better to cover or the power. If you go for less than 15,000, you're dressing poor money master." When shopping for this option apply to supplier. Some manufacturers offer the three-tiered rotisserie using different burner applications, so if you go for the propane burner, add the propane if it's a propane burner.

Blocked up the barbecue's facade, leaving openings for the rotisserie and side-cooker storage. Flat bar and brad braced the top of these gaps. On the steel and brick, Chuck installed a ridge of fresh mortar sojus which he packed each pier, that he beat back and filled all the pier points. At this point, he didn't concern himself with making the pier level—he planned to do that later.

He set our pier down low, creating a recessed platform for the stainless-steel barbecue unit. "Wash the dust," Paul said with

PHOTOGRAPH BY ROBERT KLEIN

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The Indians of the Old West left few if any in Miles, Massachusetts. Handed with a single rifle into the ground that would have made a bear's life difficult for a family where ever east, but the Indians kept digging up. But that was it! Had long had 4 feet dug, for always before the Indians was present a snake-crushing house. This Old House underlies Tom's place has been there till the early with 4 years of Indian ownership since when they ploughed a little. Tom's many times attacked a bear pastured that consumes a gun gall while the same measure would, if they were so inclined, cook some half-mile. - "What is the most delicious food you hold?" Tom says.

Standards for Pumping the Gas

The grill is gorgeous, but there won't be any sizzling steaks until there's had to cook with, permitting and inspecting a gas line is no job only for a licensed plumbing contractor. Insiders with the local codes, permits, tests and inspections required by the municipality a mistake here could blow your house into a pile of rubble. A gas utility is in a good place to start looking for a qualified professional.

For natural gas, flat piping of citation—and made, in most cases—in thickness 43 times that of glass, a 1½- to 2-inch conduit that has been used for about 100 years. (Copper tubing, usually not allowable for natural gas, is often permitted by gas pressure.)

To make the propane grill heating, the controller that turns off the gas, make the usual connection like and threads on a T fitting, to which he attaches the grill lines and a shutoff valve. All underground pipe

as he got ready to cut a 6-inch-square hole in the platform as far as the gas line. Sure enough, the man's circular saw touched the pipe, a geyser white cloud erupted from the diamond blade, enveloping both the man and his saw. In the commotion itself, he cast a larger ball for the bow and immediately sick. Every exposed piece of metal in that installation, nothing else save the sole piece, would be melted and melted. Nothing else save the sole piece,

The skinning of the barbatus was finished. New or needed skin, and amulets. Next day, when the mosquito had set up, the Palauans sponged off the powder and began the counterceremony. They plucked hills of ash, low-shamp monas on the counter and flamed them out with a 26-inch aluminum hat; working at back and forth like a modern bulldozer's screed.

The Falstaff could have caused the patient to remain in stasis to match the house, but the Gardner chose the elegant and more expensive look of tile. So, starting with the counter top, Paul covered every exposed inch of his concrete and cultured-black creamer with rounded beige limestone accented with black pebbles. He chose the same positions with the eye of an artist, using both on his hands to study their placement, taking his time, as if he were placing in Finals.

But after a day and a half of tiling, his dad, and the mill was dropped into its home. A filter from the local gas company contaminated and tested the hookup as required by law. The Goddards had a perfect place to cook and entertain, shaded by the gaucho and coconut palms and cooled by the breezes off the waterway. It wasn't as elaborate as the job that makes Fireplace & BBQ Crown sales rep Larry Malinoff proud—35 feet of triple-tiered counter space in a U shape plus a refrigerator, an ice maker, a 6-foot gas grill complete with mister and, at the new end, a wine cellar rumbling unto a round wharf—but it would get the family audience for dinner.

partitions were primed, wrapped with a special rust-inhibiting tape 18 to 6-inches on either side of the fitting, and then testied for leaks.

Exterior pipe has to be buried, usually just 12 in. to 18 inches deep. [This will allow even in the freezing northern climates.] Undergrasped black pipe needs a factory-applied plastic coating to stop condensation and should have a strip of plastic pillow insulation tape placed over the

On his next barbecue project, Tim Biles wants to try adding PVC to his barbecue. On his next barbecue project, Tim Biles wants to try adding PVC to his barbecue. The gas pipe made of corrugated stainless-steel covered in a PVC sleeve. The 1/2-in.-dia stainless pipe comes rolled on a reel and uses easy-to-attach threaded brass fittings. It has to be measured as a PVC pipe is flared, and it's more easily cut than steel at 45°. "But it's easier on hands," Tim says. "And it won't stick and burn like steel." —Dwayne Myers



—
behind whalepal—but it would get the family members fed for dinner. Mrs. Gofkin thought the family would cook them at least twice a week. "I have a grill on the stove inside," she said, "but the food doesn't taste the same." ■

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MDF—FAKING IT WITH STYLE

Medium-density fiberboard doesn't look at all like wood, but it can be a downright elegant copy when painted

Wood fibers shaped up like cotton candy are added to glue to form MDF.



Is it wood, or is it MDF? Only Tom Sales knows for sure. For his family's TV project in Melrose, Massachusetts, he built the media room's shelves, cabinets and trimmings, alone, completely of MDF.

Photo: Tom Sales

For years, mordern-day fiberboard has been the Rodney Dangerfield of the wood industry. Never mind that it is more dimensionally stable than solid wood. That its smooth surfaces offer a flawless substrate for paint and varnish. Or that it can be routed as easily as oak or maple. If people knew it at all—and most don't—they tend either to lump it with its cousin particleboard or to groan about its early, fast-study shortcomings. "The biggest challenge this industry has had to overcome is an image thing," says Tom Sales of the Composite Panel Association, which represents MDF makers in North America.

Today, thanks to improved technology and dwindling reserves of high-quality lumber, MDF is getting some respect. Cabinet and molding makers are using MDF more often as a cost-effective substitute for solid wood or plywood. (MDF molding is priced about a third lower than finger-jointed pine.) The furniture and laminate-floor industries

PHOTOGRAPH BY STEVE WIRZBAUER



Hot Off the Press

To make MDF, a factory needs a large supply of high-fiber furnish (the chips, veneer and shavings) and tools—especially by itself. To start up is the 20-foot-tall, box-shaped digester; a 100 pounds-per-square-inch pressure vessel set at 3,000 degrees Fahrenheit, which softens the wood fiber. After a 10-minute蒸煮 (煮), the hot, moist wood comes loose in the digester, the heat, moist wood vapors travel to the rollers, where they are injected between a pair of ground wood plates—a fixed, one rotating at 1,000 r.p.m.—and just 400 feet apart by a hydraulic ram. Like a pair of millstones grinding wheat into flour, the 2½-foot-diameter plates pull the softened wood apart into individual fibers at a rate of 10 to 15 tons per hour. "It takes a 100-ton cotton steamer," says LoPresti of Wisconsin Industries, says. "And it's very light, with a bulk density of 8 pounds per cubic foot."

Next, the fibers travel through a fiber line, where they are mixed with bonding resin as well as with other additives that enhance fire or water resistance. At this point, says LoPresti, we have a "soft" or tall fluffy mat of material. "Then we either think, rolling or a conveyor belt travel the hot press."

There are two types of MDF presses, the old-style calender press, in which pairs of plates produce individual panels, or the modern continuous press with pairs of steel belts 100 to 150 feet long that yield uninterrupted sheets. Both plates and belts are treated to 3,000 degrees Fahrenheit so that, after a 6- to 12-minute exposure of 200 p.s.i., the glue sets and the belts, belts and successive 100-foot-long panels meeting, stay a tight coupling.

MDF is usually made in 4x8 sheets from ½ to ½ inch thick. Some firms do 10 or even 20 feet long to minimize joints. "If you had a way to handle it, the boards could be enormous," says LoPresti.

What can you expect from MDF? It's dense, polished under-faced for jointing, plastic, and real wood surfaces

have slipped into a smoldering alternative to particleboard, which dags easily. Water-resistant varieties are turning up in kitchens and bathrooms. (At yet, no MDF is suited to outdoor use or extremely moist areas.) And what codes require dust mask materials, specify the relatively MDF makes no opposition. (Illustrated MDF has the same fire rating as plywood.) "We're finding new uses for the product every day," says Bill Watson, sales and market manager for MDF in Phenix City Manufacturing.

But bad for a producer that launched its chips, shavings and mulches—once particleboard and board, but the Allied overall in Depew, New York, decided to make a new kind of siding—smoother than particleboard and less brittle than hardboard—from short-run sections of wood waste. To Allied's regret, these first boards melted when wet, an undesirable characteristic for siding, but were soon found acceptable indoors for recessed fixtures.

As the number of producer applications grows, more and more lumber companies are taking up MDF plates. Most are in the residential lumbering regions of the West and South, near ready sources of sawdust, though some are also cities, where the waste sources consist copious unseasoned wood. According to the Composite Panel Association, US-own plants shipped 1.2 billion square feet of MDF in 1986, a 45 percent increase from 1979. These numbers are small in comparison to figures for plywood—with approximately 16 billion square feet produced in the U.S. in 1987—but new plywood plants are to the pipeline. Some makers estimate that MDF production has doubled in the last two years alone, bringing down prices from \$12 to \$15 for ½-inch full sheet and increasing MDF's visibility.

Whether most people actually recognize MDF, however, is another story. Blend in colored and sober the same colors, a usually hides under a coat of paint at beneath a varnish or plastic or wood. Consumers often lump the material together with other man-made products such as plywood, fiber board and particleboard. (See "Giant-Wood Gang," page 56.) But while all of these boards are essentially pieces of wood stuck together with glue, MDF consists of wood broken down into fluff no more than ½ inch long and at fine as cotton fibers. Mixed with a resin and compressed between plates or belts, the fluff turns dense, uniform sheets that are free of knots or other defects.

DOES ANYONE SMELL FORMALDEHYDE?

MDF is about 80 percent reveal fiber, but the remaining 10 percent is glue holding the fibers together. The glue is often composed of casein-based resins that break off-gas formaldehyde—a respiratory irritant that may cause eye irritation, respiratory, abdominal, pulmonary and nose cancers. "The emissions from MDF today are less than they were 10 or 15 years ago, but they can still be significant," says Alex Wilson, editor of Environmental Building News. MDF emits more formaldehyde than all other glued-wood products (including particleboard). "For anyone with a chemical sensitivity, this should be a high-priority concern," Wilson says.

No atom off-gassing, wood manufacturers use low-formaldehyde resins or add chemical scavengers to kill formaldehyde in. Covering MDF with laminate, varnishes, sealants or polar side reduces emissions. One covering contains formaldehyde-free (and moisture-resistant) MDF with adhesives similar to those in polyurethane glues.

The MDF industry in the U.S. has a voluntary standard of limiting emissions to 2.0 parts per million. However, George Sennick of the Environmental Protection Agency's chemical-control division says the standard "doesn't correlate to indoor situations." (The Occupational Safety and Health Administration requires employers to train workers if major formaldehyde levels exceed 8.0 p.p.m.)

New rules of the Composite Panel Association say 10 tests show that the formaldehyde in MDF have half-life of six months or less. Sennick is skeptical. He says independent results are needed to verify the half-life results and to link humidity and temperature into account. "A 10-times increase in temperature doubles emissions," Sennick says. As a practical way to limit exposures, he recommends that firms ensure sharper purchases of cabinetry and furniture rather than loading up a store of mass. "We are statistic," he concedes, "to stay away from these materials entirely."

The smooth look means less waste because cut pieces can be used many times over. "With plywood, you have to follow the grain, so you end up with lots of small pieces of scrap you can't really use," says Tim Clif House master carpenter Norm Albrecht. "Whereas with MDF, it's non-directional, so you get more efficient use of the sheet." Also, unlike plywood, MDF is homogeneous, so a cut will extend as easily as solid wood. "With plywood, every time you expose an edge, you've got to find a way to cover it," Norm says, "but with MDF the edge is treated just like a solid piece of wood."

MDF has advantages over solid wood as well. Because MDF has nearly the same density throughout, it expands and contracts evenly and consistently, which eliminates warping, cracking, cupping and the like. There's no worry about warping, the splintery roughness left behind when raw edge bits and saw blades rip wood grain open. MDF's smooth surface resists wear, which also tends to last longer because of the board's dimensional stability. "I love the way it turns," says John Doe, who often uses it in the job. "And once it's painted, there's no dampening between MDF and wood."

Notwithstanding, MDF has drawbacks. It's about 30 percent heavier than plywood. "The thicker sheets are almost a two-man job to move around," says Norm. And though about a third to a quarter as stiff as solid wood of the same thickness, sheets of ½-inch MDF should be kept to about 3 feet in length or be given extra support to prevent sagging.

Because it's more dense than most wood, MDF requires more adjustments when it comes to fasteners. Made-for-wood fasteners won't work, and they can have a slight kickback around the head. Nailing near edges can break off chunks of the material. MDF holds screws about as well as softwoods such as Douglas fir but has only about half the screw-holding value of red oak. "It's a typical drywall screw, but a coarse-thread screw is better than a fine one," says Norm. To eliminate problems, cabinetmakers recommend either using self-drilling screws or drilling pilot holes and counterboring. Router joints, however, work well without special treatment.

The reason blade and bit, dulling even carbide-tipped ones much faster than most wood. And cutting or routing produces a fine dust that can be irritating if inhaled and is hard on certain tools. Says T.O.H. contractor Tom Sleva, "You'll want to wear a dust mask to protect yourself, and use a vacuum attachment on your tools."

A damp drive board like MDF, but it will swell if kept in prolonged contact with water. To find out how much, we soaked an account 16-inch piece in water for a week. The MDF didn't dissolve, but it bloated 42 percent, causing sponginess and becoming too soft to throw moldy colors. Although extreme, use or exposure may call for keeping MDF dry.

Spared by the increased acceptance of MDF, manufacturers are experimenting with ways to make it both easier to use and more versatile, offering pre-cut, pre-primed, plane-finished or veneered molding and millwork in various sizes and thicknesses. Many are trying the durability of these MDFs in more specific applications. (Lower densities weigh less, so more, higher ones tend to be stiffer, be more brittle and produce sharper edges when cut.) Others are adding the manufacturing process to make fully finished boards lighter or to eliminate or reduce formaldehyde off-gassing. (See "Does Asymco Sell Formaldehyde?" page 33.)

To date, the efforts to refine MDF have focused on the furniture and cabinet trade. Most home owners don't think of the choices of lumber much other than if they do. Would-be MDF buyers have to call the Composite Panel Association for a local distributor. MDF manufacturers want to change that. "If you think about the needs of a house—all the panel wood trim around every door and every window, the chair rails, the skin boards that go in the staircase, the shiplap in the closets—that all used to be lumber," says John LaForet, Williams' industry vice president for sales and marketing. "But as wood becomes less available and more expensive, it can all be MDF."



Glued-Wood Gang

1. PLYWOOD: Thin sheets of wood veneer, bonded together by an adhesive. The grain of each sheet is perpendicular to that of neighboring layers. The strongest and most expensive man-made wood.

2. HOPEDALE: Highly compressed oak veneer fibers with a density of approximately 48 pounds per cubic foot. Often perforated to hold glue.

3. MDF: More flexible than basswood and smoother than plywood or particleboard, a good substitute for basswood. Permit density increases 44 and 80 p.c.f.

4. PARTICLEBOARD: Made from wood and other cell materials. Comes in densities ranging from 30 to 70 p.c.f. Widely used as a substrate for decorative veneer, laminate and insulating materials. Holds screws better than MDF or the same density but hangs more readily.

5. FLAKE BOARD: Two thin veneer substrates made from white birch, eastern yellow poplar and eastern white pine. These woods are usually aligned in the same direction, then glued together perpendicular to each other. Density for both ranges from 30 to 60 p.c.f.

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IF IT BREAKS, THEY WILL FIX IT

How to play the warranty game

The end came quickly for Robert Reitell's laptop computer. His daughter, Lauren, had taken it with her to college where, all at once, the battery charge stopped charging and the motherboard started behaving badly. The eventual breakdown of the \$2,500 machine was inconvenient, to be sure, but the timing couldn't have been worse. The laptop was just three months older than its one-year warranty, and the Scarsdale, New York, plastic surgeon figured he'd be stuck with the \$1,100 repair bill. But then Reitell remembered having bought the user with his gold credit card, which exceeded the manufacturer's warranty a full year. "I called the credit card company, and they said, 'Absolutely, you're covered,'" he says. "All I had to do was send them the receipt, a copy of the warranty and the repair bill." In less than a month, Reitell got a check for \$1,100.

When it costs more than a grand to fix a computer or even \$200 to get a stove running again, it only makes sense to maximize warranty protection. Besides flashing the card, buyers have other ways of keeping fresh purchases from becoming expensive post-warranty problems, even after the coverage expires.

Original warranties for household goods typically last a year, although many appliances come with longer warranties for a specific part, like the transmission on a washing machine. That's what makes reading the fine print worthwhile. But don't worry about registering your purchase with the manufacturer. Sending in the card

any chance that you'll be around in the event of a product recall but, says Jordan Clark, president of the nonprofit United Homeowners Association, "At long last you can produce a sales receipt or canceled check that proves when you bought a product, you'll get really quicky for warranty coverage. I just make my receipts to the instruction booklet and file them away."

What Clark says "recoups," he means two: the one for the product and the one that proves you bought it. In their gold and platinum memberships, Visa and Master Card typically require the original coverage, up to an additional \$100 per month as much as \$10,000 per claim, and/or American Express for all of its cards.

Coverage beyond the card can also be had from expensive extended warranties sold by retailers and equally costly umbrella policies issued by home warranty companies. But on the scale of wise investments, these two rank pretty low. [See "Homeowner's Warranties" on the next page.] The only other way of getting longer, albeit limited, coverage is by spending a few dollars to add a rider or endorsement that names a specific item to a home-owner's insurance policy. It's not a warranty, so there's no coverage for wear and tear or routine maintenance. But it does cover specific parts including theft, accidents, larceny and water damage.

A major wouldn't have chosen the dimuse of Ruthie's laptop but, had it failed while his credit card coverage ran out, he still might have been able to get a free fix. "There may not be formalized programs to cover out-of-warranty claims, but there is definitely an area of flexibility," says Babar Leonard, an attorney and the author of several books on personal finance. That's particularly true if the malfunction occurs within a relatively short

time—say, two or three years—after the warranty expires and if it clearly resulted from faulty parts or shoddy workmanship. "The more often you call and the higher in the organization you get, the more likely your success," says Mark Connolly, director of appliance terms for the non-profit Consumer's Union.

Start by calling the company's customer service hot line and tell them the history, write down call dates and times and the names of the people you deal with. "Chances are that you'll get a different representative every time you call the service center," says Clark. "But if you call and say, 'I talked to Betty on the 20th, and she said that,' they'll know you are someone to be taken seriously."

By playing the squeaky wheel doesn't bring satisfaction, making sure most of a state consumer-protection agency ought, at least a step to small-claims court (although collecting on a judgment against an out-of-state defendant can prove difficult). The Better Business Bureau and the Federal Trade Commission will, alas, only record your complaint, neither can intervene directly on your behalf. But if the offending product is a washing machine, refrigerator, well pump or other major appliance, you can appeal to a little-known but surprisingly effective agency of last resort: the Major Appliance Consumers Action Program.

Founded in 1979 by the home-appliance industry, the program provides consumers with mediation of otherwise irreconcilable complaints. MACAP starts by contacting the manufacturer in hopes of gaining a single, swift resolution. If that fails, the case goes before a nine-member arbitration panel consisting entirely of industry outsiders including the chairman of the home-economics department at the University of Massachusetts St. Paul, a retired Smithsonian Gas and

Electric engineer, and a senior editor of Better Homes and Gardens.

Although all major U.S. appliance manufacturers participate in the voluntary program, but few consumers take advantage of it. In 1996, for instance, MACAP worked through 890 complaints, says program administrator Marion Barnes. "Many, though not all, of the complaints include information about us in their owners' manuals, but few people actually pay due for us in the literature."

Too bad, because consumers have a decent chance of winning. (Only one percent of the 1996 complaints were resolved in their favor.) A recent case illustrates how the program works. After buying an electric range in 1993, the owner had problems that repeated service calls couldn't solve. (MACAP operates on a fee-for-the-story basis but maintains anonymity for both sides.) In April 1994, the owner asked the manufacturer to replace the \$1,225 range or extend the warranty for another year. The manufacturer agreed to the extension, but in September 1996, after more than a dozen service calls, the consumer demanded a replacement, a refund of most of the purchase price or a warranty good for as long as he owned the troublesome unit. To all requests, the manufacturer said no.

Last June, the owner filed a formal complaint with MACAP. After being satisfied, the manufacturer offered to refund \$39.95 for an April 1997 service-call. When the owner said no, the matter went to the arbitration panel. Within days, the panel recommended that the manufacturer give the owner a new range and that the owner pay the manufacturer \$199.50 plus value of his use of the original unit. "Obviously, not every case goes aquatic like this one," says Barnes. "But we have files full of lat-

tent frus people who were pleasantly surprised by the results of their complaint. That's why it's always worth pushing things to the limit."

Unwanted Warranties

After taking up the merits of some big-ticket items, and then selling it, the salvers' stocks pushing the buyer to shell out more for an extended warranty or service contract. It seems to add protection. A few minutes ago this subject was durable and reliable, now it needs breakdown protection. Don't tell her to. At \$10 to \$200 per year, paid-on warranties and service contracts are usually a waste of money. "Our research has shown that if something major is going to go wrong, it will most likely occur within the warranty period," says Mark Connolly of the Consumer's Union. (All warranties extended coverage to sites. For heating equipment that needs regular maintenance, for example, the coverage may be cheaper than paying for service calls one at a time.)

Home insurance, while it can't cover major basic defects, including appliance breakdowns, also costs a lot—\$200 to \$500 a year plus \$50 to \$100 per service call—and the fine print may contain exclusions that can leave a policyholder with little real protection. And there's always a chance that the insuring company won't be able to make good on its promises. In 1994, state insurance regulators took over one of the largest automated warranty providers, Home Owners Warranty in Arlington, Virginia, because the company hadn't paid out enough money to cover claims.

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THE MONEY PIT

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PARADISE FOUND

Measure an old house's value in happiness not investment potential



Does life imitate art? I consider that possibility every time I climb the staircase in the center hall of my house in upstate New York. I'm reminded of a scene in the 1986 comedy *The Money Pit* when Tom Hanks, playing the hapless owner of an elegant but decrepit mansion, starts to ascend a floating staircase and the magnificent structure suddenly disintegrates beneath him. Amid a shower of twists, turns, splintered and shattered timber bits, poor Hanks ends up tumbling for a second-floor balcony. I'm ever mindful, as the proud owner of an old house, that grandmoles

卷之三十一

sweat of architecture and stunningly crafted woodwork can hide disasters. I always tap cautiously, haunted by the knowledge that my next knock might trigger a precipitous descent into disrepair. So be it. What's a cultured survivor or two on the way to the natural proper mortality stage?

My beloved wife, the lovely Lady Pamela, and I led a complex postmodern life in a converted condominium near Tuxedo Park, Connecticut, till just ago to her Friendless, a Greek Revival estate perched on a wooded hillside on the ridge of the historic gold village of Wyoming, New York. Like Hemingway, played by Shirley Long, we believed that clear-thinking adults, accompanied by relaxed confidence and wads of cash, could overcome any pitfalls on old house night counts.

Farmsted beehived us with Carter-like solar batteries on the 56 acres that remained of a 1,000-acre Black Angus here long since incorporated to neighboring developers and their hordes of bungalows, the 6,000-square-foot manse and the adjacent six-petaled carriage house had been built in 1959-'62 by C. B. Atcherson, a pupil of John D. Rockefeller in the Presidencies of fields. Lady Pamela and I were booked the moment we saw Farmsted, especially considering the fair-toe price. We had been shopping for property in southern California, where sellers described everything built prior to the Carter administration as historic and even the most mundane also bore commanded a price to the range of the G.I.F.P. at a dead-world auction. By contrast, the market for large country houses in upstate New York was sluggish, and the people selling Farmsted were desperate. As a broker told Pamela on the phone: "You get to expand on a legacy through inheritance. That's the basis of real estate."

Lady Pamela and I effusively swept aside our fears about structural failures and other tribulations. The house's attractions—the soaring two-story entry hall with its elegant staircase and balcony, the social-historically intended fireplaces, the carved woodwork and the Italian crystal with sconces and chandeliers—all transcended any possible shortcomings. True, our contractor did murmur about the ancient wiring, some of which dated to the days when the house was lit by direct current supplied by its own asphalt-posted generator. True, the water pressure was dismal in the three tiny bathrooms. True, the meat fixtures had held

an apparently salvaged leaden light fixture, perhaps because the walls contained not a shred of insulation. (This permitted spaces in the inner walls to harbor all manner of small critters—excluding house flies, which crawled across the 16 windows on warm days in a grisly reenactment of *The Amityville Horror*.)

We ignored the labyrinth of tiny bedrooms in need of expansion into livable spaces, notwithstanding the observation of Leonardo da Vinci that "small rooms discipline the mind, large ones widen it." (No wonder his rivals Machiavelli and Bramante got the commissions to construct St. Peter's!) Oh yes, a major kitchen renovation was required, not to mention structural improvements including a new roof, foundation repairs, metal roofing, painting, papering and redecorating.

Farmsted is still a work in progress. I cannot extrapolate the thousands upon thousands that we have laid into this charming old master piece, because it's worth every last dime to us. The house has been a stress- and comforting refuge. Our 27-year-old son lost his battle with a rare cancer here but, in a strange and majestic way, Farmsted offered solace and protection during our deepest grief. My wife, a city girl, has never been frightened here, even alone at dark, thundering eagles

she can see explain why. This house harbors us and welcomes visitors, and its value measures any dollar amount we could place on the timber and glass and stone that comprise it.

Marital funds, cattle futures or even rare stamps would undoubtedly have been a better bet if I wanted an investment. But this is a home, not a portfolio. It is the height of folly to push pennies with the expectation that one day, if the Penns smile and the credits don't run, you will end up profiting from the sale of a home. Had Lady Pamela and I followed such a path, we wouldn't have purchased Farmsted in the first place. And we would have cheated ourselves out of nearly two decades of unforgettable country living.

But we find the simple life! Eh canine rats? We're more crazed than ever. There is no surpassing the madness of the late 20th century, regardless of location. And we have learned to head our own reenactment of Teddy Roosevelt's words, walk softly, and carry a big wallet. We also discovered that the tradition and patina of wonderful old houses cannot be measured in material terms. ■



FARMST AD

TOE: Last painted a *derelict*, Farmstead's founder died for a *dear off-the-millimeter*. However, we scope several layers of paint off the color catalog and apply an off-the-shelf stain. **NOTES:** Among the Upstate State historical finds, the previous owners at a rather decent of moneymen ages.



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LETTER

from *This Old House*

THE CHURCH OF THEIR DREAMS



TOH host Steve Thomas, left, and architect Michael Dworaczyk, right, at the planning stage for the San Francisco project. Below:

It's Monday, and we're shooting the last show of our San Francisco project. But the job is nowhere near done. Dodging El Nino, the crew has managed to paint the front facade and with black trim. The slate of bare ground next to the front steps has been landscaped with a few palms, brick, brick-carpenters work over plasterers, who work around electricians and plumbers. But it's too late. Tomorrow night, our tapes will fly to Boston for final editing. Not finishing the project by deadline has happened before. What bothers me is my fear that, although the purchase plus construction costs of converting this church into a residence push \$100,000, Mark Dworaczyk and Lauren Ann Belegay may not be getting the house of their dreams. The problem, to me, is that the bedrooms, bathroom and kitchen are jammed into the back of the building. The great space of the chapel, converted into a living room, dominates the front. But families tend to congregate in their kitchens—not in their living rooms—so what will motivate people to use the great space?

I put the question to Mark. He hasn't really "thought" about the design, he says. The layout popped into his head when he first saw the church. He'd hired architect Barbara Chambers to play devil's advocate; her staff insisted changing his original vision, master suite upstairs facing out,把式-style kitchen in the old service area, great space reserved for reading, listening to music, watching TV, relaxing. The kitchen and the great space have different textures, Mark says. The kitchen is industrial by design: all the stainless steel and halogen lighting. It's a place to stand at the bar, while listening to music—not a place to relax. For this, guests will gather in the great room, where they will find easy chairs, a stereo, a fire. It's intriguing but not consistent. When Thursday comes, we shoot a few scenes, then furiously clean up for the wrap party. After guests arrive, they stand for a while in the kitchen, then move on to the great room. It beckons with its leather sofa and chairs, food and drink, the stereo playing "I left my heart in San Francisco..." Great after-glow follows this pattern. I wonder if I'm seeing what Mark envisioned when he bought the place—his vision was a good one.

A month of wild remains on the pages before Mark and Lauren Ann will be able to move in. At press time, they were eagerly anticipating their big day—and an even bigger day as well: their wedding in Charleston, South Carolina, in late April of this year. We've wished for them. Watch for the July/August issue to see how this project finishes up.

—Steve Thomas

PHOTOGRAPH BY STEFANO MARZEL



poured brass

In New York City, they still make doorknobs the old-fashioned way

With a hissing roar, an emerald-green flame flares from a smoky barrel-shaped blast furnace. Two sweat-soaked men in heavy leather aprons squat against the acid air, waiting as the temperature in the furnace climbs to 2,300 degrees Fahrenheit, hot enough to melt a new mixture of copper, tin, zinc and lead into liquid. Maneuvering a steel rod with fireclay tips at each end, they muscle a red-hot crucible out of the furnace, rotate the rod and capsize the vessel. Molten brass pours out, the color of Nehru orange saffron, rushing to fill the voids of a sand-cast mold. Within minutes, a machinist removes the mold, breaking out the rough-edged sand-coated hunk of metal. During the next few days, (continued on page 70)



THIS PAGE: A crucible at E.E. Gurnee, the last remaining commercial foundry in Manhattan, pours a gold-plated Renaissance door pull or interior lock. E.E. Gurnee has been making brass doorhardware by hand since the 1850s; company May's companion to day makes reproductions of period locks. This brass lock by Dennis is based on an early 1800s French design.

(continued from page 64) by a process common old, a dense craftsman will rap, hit, chisel and polish the brass lamp into a slightly flared Louis XV-style design.

Here, an 18th-century building in New York City's Greenwich Village, worked at P.E. Guerin Inc., still use ornate brass hardware as their predecessors did 140 years ago when the boundary was established. Stand in worn wooden beams and dormer on the company's first floor are hundreds of door knobs—old world design stamping from solid. Guerin to duplicate Louis XV—respects to the history of an ornate object taken for granted today.

Nicholson knows exactly when and where the masters had come. Fashions note handles, locks and pulls, such as the primitive Egyptian pull in New York City's Metropolitan Museum of Art, dating from 2,000 B.C. Doors with more pulls could be blown or yanked open by invaders, so masters devised the latch—a hinged bar that dropped into a slot. Then, to separate the latch bar from curiosities, someone had to cut a string and pull it through a hole in the chest. The latching was not. Later came the chunky handle with spruce shaped thumb-pegs, followed, finally, in the mid-1700s by the ornate handle a lock or lever with a shank through the door attached to a rim that fitted the lock. (Levers made sense for tall double doors with narrow sides, where using a knob could break a knuckle.)

For more than 200 years, the clockhand has continued as a primary—and sometimes ultimately ornamental—object. Clockmen have made intricate japhetic, cruet, discoid, cuboid, elliptical or wood, bone, brass, wrought iron, porcelain, ceramic, Baldwin, plater, ivory, jade, acetate and, aluminum leaf, a Chrysanthemum branch, porcelain, blown glass and solid gold.

From 1770 to 1830, the United States' heyday for producing elaborate decorative hardware, manufacturers created knobs designed that employed patterns from foreign cultures, portraits of the famous, pretentious monogrammists, even animal heads. Louis Philippe and other important revolutionaries of the era designed every hardware detail of their commissioned buildings, including doorknobs. Turn-of-the-century home owners picked decorative hardware from elaborately mechanized selectors that costed the displays found in fine specialty stores.

The pin-tumbler cylinder lock changed all that. Louis Yale Jr.

PHOTO COURTESY OF PE GUERIN INC.



A, P.E. Guerin Louis XV-style brass door handle and cylinder lock. Design based on original door handle from the residence of King Louis XV. The brass door is painted in antique. **B**, This original ornate leather-covered metal door handle was designed in 1830 by P.E. Guerin Inc., one of France's leading decorative hardware makers of the time of the century. **C**, A Grecian and French P.E. Guerin, 1820s, plated brass door handle.



Suspended in a jeweler's vise (upper), this brass handle is engraved with fleur-de-lis motifs and decorated with a central diamond-shaped medallion. (Handle is twice wider than, twice as wide as, and twice as heavy as the original.)

Master it was makes one, until it fits to her blouse holding the circlet of his wife's hair. "You can't start or stop, or the model is ruined," says Mireille Grimaldi, master at P.E. Guerin's workshop.

For more than 200 years, the clockhand has continued as a primary—and sometimes ultimately ornamental—object. Clockmen have made intricate japhetic, cruet, discoid, cuboid, elliptical or wood, bone, brass, wrought iron, porcelain, ceramic, Baldwin, plater, ivory, jade, acetate and, aluminum leaf, a Chrysanthemum branch, porcelain, blown glass and solid gold.

Louis Yale Jr.



A closer look at the finish of her work is a hammer and top chisel, to delineate the profile of a lobed shaped Louis XV door handle. When the brass first arrives at the workshop, its surface is not as refined, so a rough edge is needed to create a smooth finish prior to the final stages of the engraving. When it leaves her workshop, its intricate design is polished.

Installing Vintage Doorknobs



Tube lock
for spindle set
on the door.



Spindle



Period doorknobs can transform a dull door or add a finishing touch to a renovated home. And while reproduction door hardware abounds, there's nothing quite like the charm of truly vintage hardware. A few minutes, the right tools, and some basic know-how are all you need to install these, whether you're replacing old knobs or if they came with your new door; just make sure your door has holes for standard mortise locks.

Because the installation may require a variety of fittings, take the time to map out hardware on the door and a paper template of the door's holes in a notebook.

1 Vintage knobs have spindles either set on the door or threaded, and these are held in place by machine screws (800 to 8000 inert accommodate either type).

2 Threaded spindles (R), when combined with threaded knobs, make it simple to fit the knobs onto doors of any thickness. If knobs are not threaded and the exterior spindle has exterior holes, consider a slide-on spindle (H). Also called a threaded spindle, this piece is designed to allow a door to be equipped with the accessories. (Price is a spindle and the adjustment that can be made.) **3** Resinotes (S) is \$100 per pair), available in a wide range of period styles and finishes, must fit the back of the knobs and cover the existing hole in the door.

During the renovation of a 1940s house in Lexington, Massachusetts, contractor Tom Gill (G) is working with vintage glass knobs.

4 First, insert the tube lock

mechanism into the hole for the face plate. Next, he will test the length of the spindle by holding the knobs and rotating them in place. As is often the case, the spindle needs to be shortened. Tom uses a hacksaw.

5 He installs the knobs and

spindles, secures the knobs with screws and tests the fit.

installed in 1936. It was not only cheap to manufacture (but stamp on the parts) but also simple to install. Drill a couple of holes and pop it in. By the 1950s, the cylinder lock had become the American standard, typically supplemented by a key operated dead bolt. But the advent of cheaper locks made cheap, dollar doorknobs, and that may explain the demand for unique and reproduction knobs today.

At P.E. Green, time

magazine took to another era:

The beauty of the door knob used to wait until a door was closed. Now P.E. Green craftsmen bend to their labor like medieval alms. A door knob is made in two parts: head and neck. Fusing the metal head into the neck, the most decorative part of the process, takes the first time. When the knob components emerge from the mold, they still have sharp and rough surfaces that have to be smoothed to a finished knob. A machine wire-brushes the components and strips them in acetone to clean them. At a forge, a fire heats the two parts together. A craftsman files the knob and polishes it, then turns it over to a chaser, who taps decorations onto the piece by hand with tiny chisel, some for tracing the outline of the design, others for adding texture. One worker then polishes the knobs, another sharpens them and a third places the design by dipping it in a mix of copper, brass, nickel, silver or gold. Finally, a craftsman packages the pieces, handing them off to several batches, from one to the next.

In the late 1950s, the knobs—the brass touch on the doorknob every step of the way—didn't come cheaply. The cost to casting it, casting it to a pattern, then to the

machining,

polishing,

and then to

the plating,

then to the

finishing,

then to the

packing,

then to the

shipping,

then to the

customer.



TOP: PE GREEN; BOTTOM: TOM GILL



Knobs, levers and handles are all from antique stores or restoration for a reproduction look. A vintage door lock adds character to a room's decor or a porch. Here, the author uses a C-clamp to hold the door handle in place while he installs the door handle. The door handle is mounted on a light-colored wooden door frame.

BOB GILLIGAN, left, and MIKE GILLIGAN, center, 20-foot wooden flagpoles. At right, a 24-foot shouldered oak pole, 10 feet long, with a 10-foot mast 10 feet long. Every Saturday, from April through October, flagpoles stand on San Francisco's Bay Area coastal pastures. 24' - 27' foot poles for acre-size buildings; 25' to 30' foot for medium-size homes; and 30' to 40' feet for giant houses.



RALLY 'ROUND THE FLAG, BOYS

A flagpole in Santa Cruz, Calif., May 1992

Long before fiberglass or extruded aluminum, sailors used lathes to turn wooden flagpoles—most with lead-filled densities. Honoring this tradition, flagpole terminology still twists nautical: Ropes are raised by sheaves (galleys) and halyards (ropes) that are secured on cleats. Boom poles often have double or step masts, yardarms (topsails) and gaffs (extra spars perpendicular to the yardarms). Mike Gilligan of Gilligan's

BY VICTORIA C. ROWAN PHOTOGRAPHS BY DAVID ALBANESE

PREPPING THE POLE



1. The day before installing the pole, Norm rigs a framework with two 6-foot poles, two 4-foot poles, and 24 inches of rebar, using a protractor, degree and thread. Because Polydura Sante's Journey will stand extremely well, he doesn't need to add gravel or crushed rock before pouring the concrete. (The foundation consists of eight cubic yards of dry concrete mix.) The base should be high enough that the pole can swing up and down with ease. Norm stands on 4 inches of concrete, less than six feet from the ground, and drops in the anchor. He checks the anchor's alignment and uses a 12-inch bubble level, then fills the hole with concrete and tamps it smooth.

2. After the concrete has set for 24 hours, Gilligan and Norm will lay out the established coordinates. In order to center the cleat on the pole's偏心轴, Norm measures 42 inches from the bottom. Gilligan uses an 18-inch form shell ruler for the 16-inch sides. He then marks the偏心轴 (center point), Gilligan then marks the偏心轴 with a pencil and the偏心轴 with a chalk line, and finally marks the偏心轴 with a chalk line. Before setting up the track, he creates the mounds and edges with a shovel and a string line for a winter right-angle fit. He fits the final, a gold sphere, onto a 16-inch threaded bolt in the center of the track.

3. Finally, Norm adjusts the locking bolt to "Saggy" tightness. Gilligan once again checks to make sure the pole is plumb.



Flags-and-Poles in San Luis Obispo, California, will create flag poles for residential use, from old-growth western red cedar Douglas fir, which has enough tensile strength to withstand high winds. His customer-made poles taper up from a four-sided base in a tapered transition post and a spire on top.

Although 15 miles from the Pacific Ocean, Padilow Farm in Novato, California, owners stationally rotated limestone Welsh armature. John Padilow built the rustic Victorian house in 1879 at the centerpiece of a 280-acre dairy farm. Today, his grand-grandson Robert Padilow Scandalsbury's family lives on the farm, a cluster of passed buildings in a score. The operation and survives by milking—not cows but rather the special rams and fiber educators, which have used the site for weddings, art shows, and television shows including "The Wonder Years" and "Felicity." The main house sits atop a valley lawn with a small upper deck, the ideal spot, Scandalsbury thought, for a 20-foot flagpole to serve as a beacon for cars on the highway just beyond the gardens.

To assemble a flagpole, the first step is deciding where to the pole sit. For Horace Hoenig of Horace Hoenig, a distributor of Gilligan's poles, environmentally assembling a mock up with PVC pipe and couplers. One person should hold up the pole to various spots so a second person can judge the effort from a distance. In the Scandalsbury's case, however, there was no question that a gassy spot within view from the front porch was meant for a flagpole, especially since they already had another pole obscured by olive and palm trees off the driveway.

Gilligan and The Old Man owner/carpenter Norm Abram began by digging a hole and pouring a concrete foundation to hold the passed steel anchor, which supports the pole and prevents ground movement from rocking upward rotting the wood. The anchor's design a scabily allows the pole to be lowered easily for painting or repair work.

The concrete required 24 hours to set. In the meantime, Norm measured 20 inches from the base of the pole—which remind me packed moles—so as to drill a hole for the post hole. Although Gilligan's poles come pre-drilled, Norm and Gilligan still had to scratch the clear and rough tracks, so they cut the flange, through which the bolts were threaded. For a total, which screws the track, dry, chose a gold-colored rounded aluminum sphere. (Flaggs and mast sections are popular copper but, in severe wind, a wildly flapping flag can pull off a ring or both.)

Then the pole was ready for driving in the anchor. The man took notice holding the pole steady and snapping back to eyeball it. "The signature of the base really determines the alignment of the pole," says Norm, who coincidentally had flag-raising duty on September 11th. Using the anchor's predrilled holes as a guide, Gilligan traced holes over the horizon of the pole on two sides to hold another bolt, which would lock the pole in place upright. Norm and Gilligan descended the pole back to the roadway and drilled the holes for the locking bolt. Finally the flagpole was ready for some zip.

By now, the sun was setting. Although that's usually the time to lower a flag, Norm and Gilligan secured the pole across the lawn and stepped it into place. After tightening the bolt, Norm attached the flag. Everyone watched breathlessly as it puffed on the half-mast. The flag tapped to the top and thumped in the Santa Ana breeze against the orange-tinted sky. ■

Picking a Pole

Although wood is the most materially authentic material for a flagpole, it is also the most expensive. Here are some less costly options.

PLASTIC: The least expensive poles have a UV-resistant finish and are constructed with the majority of fibers running vertically. Glass fiber horizontally makes the pole weaker and can cause failure. Fiberglass poles are available in various colors and are light, easy to install and maintenance-free. The clipping can be run inside the pole to eliminate the sound of snapping hardware. Most models do not make learning easy, however.

STAINLESS ALUMINUM: Although light, easy to install and durable with internal clippings—the key parts in strong against metal—cause painted aluminum poles white, leaving uncoated spots that may stain. The most durable Grade 3 is often coated—designed coated, which is less likely to damage against a white vinyl-coated houses.

TELESCOPING ALUMINUM: The sight of telescoping sections and joints may not enhance the elegance of a porch umbrella, but telescoping models are easily portable. Putting them up or taking them down requires only a few minutes.



Norm Abram and the crew just by removing an 18-ft-tall custom flagpole flag. The Scandalsbury's wanted to fly a 20-ft-tall version later on.



Peter King rounds a block slab of clay to form a base, which he'll later add to a center column. Like a potter's compass, his hands take a piece from the clay and stretch and refashion it.



clay carpenter

Peter King's ceramic creations celebrate mother earth and father fire

"Peter," says Katie Dineen, "I'd like you to dedicate my life."

The request takes Peter King by surprise. After a long day in his architectural ceramics workshop in Pensacola, Florida, he is exhausted from slaking, milling, pounding, rolling, laying out, scoring and sculpting 700 pounds of clay that will eventually become a glazed wall of rising and falling ocean waves. This last few days, King has been pondering why he is so obsessed, so in love with a craft that has paid him so little in money. Tonight, after a glass of wine, he has been thinking about this again, absentmindedly rubbing his tired eyes, tugging at his beard and stroking his ponytail as the 30 or so men and women who have come to celebrate the first batch of pottery fired in Sinead's backyard

"Clay is the only material you physically touch with the softness of your hands and fragrance remains through film and over those kinds of years," says King. He built a furnace to accommodate and absorb stacks of cedar that he plans to burn for a day. "The clay becomes more or less light and you can get it in shape at that point," he says.

John single around him. Shared in a series of classes who studied under King. So he began working and taught his quick. Gaining you laugh. "Ha Ha Ha."

"Sorry," he tells her. "Be glad to."

Sonia, 16, walks and waits, people are running a series of classes that handmake pots, bowls and cups from the kiln. Gift by himself, King, a master in stores and a small shop, has noticed that the prints of the early evening's quarter moon are tilted five minutes after 7:00. A cooling wind blows from the east. But when a single, the smoky French air passes like an exhalation on his skin. The humidity reminds him of a scene from One Hundred Years of Solitude in which it has rained for four years and, Godless! Garcia Marquez writes, the "air was so damp that fish could have come in through the doors and eaten out the windows." King would like to go home, read a few pages of Garcia Marquez and fall asleep. Instead, he thinks: "What will I say to deduce Karen's look?"

Peter King, 46 years old, has been making ceramics for 25 years, taking pieces clay, shaping it with his hands and tools and firing it until it is no-hard-worn stone or brick. Back South, King began with pots, but he then moved on to floor tiles, fireplaces, door frames, gateways, entire walls. In college, on his way to a photography degree, he met a friend who worked as a painter's studio. "I remember seeing that first pot being turned on a wheel," he says. "I became addition." He finished his degree but abandoned plans for graduate school. Instead, he spent up to 20 hours a day at the studio. And once, in 4:00 in the morning as he managed to stay at his hands, he had a working dream. "I envisioned these huge ceramic columns, and I wrote, 'You could really make anything out of this stuff.'"

It was an oddly prescient thought for a 21-year-old kid with no knowledge of architectural history, no idea that Bataan's future was a ceramic model, that the focus of Peru decorated temples with columns, chairs—before the 20th century's stark industrial architecture—ceramic pillars, surfaces and arches often adorned buildings in the United States and Europe. For years, King made coffee cups and flowerpots and sold them out of an old van in craft shows on the East Coast. Then one day in 1979, he was telling with a man far whom he was working, a ceramic studio. The man said he was parting in a new fireplace—and King, on a whim, offered to build it in all clay. 10 feet high, 6 feet wide, on a simple six-inch-thick design. He laughs at the memory.

"It was an overnight success."

Since then, his St. Louis studio in Forest Park has produced hundreds of one-of-a-kind ceramic architectural adornments. He calls his work "clay sculpture." Spanish, French and Gothic arches, ocean wave waterfalls, Mayan handboards, a fountain that mimics a pipe

organ, a door protected by a giant African shield, mismatched garden pots 12 feet high and flagstones with Aztec heads, Indian shacks, Jacobean columns, damaskos, great blue herons, dolphins, palm trees, every imaginable flying fish, Egyptian hieroglyphs, cleopatra, geometric concoctions, even human faces.

Someone poses King a plan of future. So, what will we say tonight?

King has been steadily handi, earning in himself about his work. "I'm well past 40, and I still haven't made any money," he says. "I have \$10,000 in my credit card." He works seven days a week and lives in three rooms over his shop. He drives a '78 Ford minivan with an odometer showing 170,000 miles. King's yearning for affluence conveniently collides with stubborn performances. For instance, he once agreed to charge \$50,000 to build decorative green for a sculpture park in Maryland. When he belatedly realized his rates were too much for the setting, he made them 2 feet wider and 2 feet taller—and lost \$15,000.

"I couldn't put that price out there and have it be less when it could be more. If I don't make money, that's all right. That's an affordable thing about each piece of work when you know it's right no matter what anyone says." People so obsessed with excellence are often slow to take pride in their work. That's too simple. Pride isn't the source of his excellence, King says. Pride is a product of doing something close to perfectly as he can. "It's an indescribable feeling. It's not because others say it's great. It's internal. The Bible says man was made in the image of God. That doesn't mean He has two arms and two legs. It means that, like our God, the most important thing we do is create. It's deep in us, somewhere near the brain stem. When I finally get a piece on the shelf, it's there; a physical entity. It was once an idea, and now it won't go away. I made some use of my fingerprints. That kind of power is seductive. That's why God made man out of clay."

King creates entire flagstones and walls of red clay in a cramped, dim garage workshop. He and two workers start with 100 pound clay slabs 48 inches long, 30 inches wide and 1 inch thick, laying the slabs on giant wheeled tables that crawl and move under the clay's weight like a house settling on its foundation. The men use blades, chisels, hammers and the tip of their fingers, each drawing and patterns intricately clay hand-dug holes as abandoned jet nearby. When sculpting three-dimensional birds, fish, waves or abstract shapes, the men layer up to 3 inches of clay in selected.

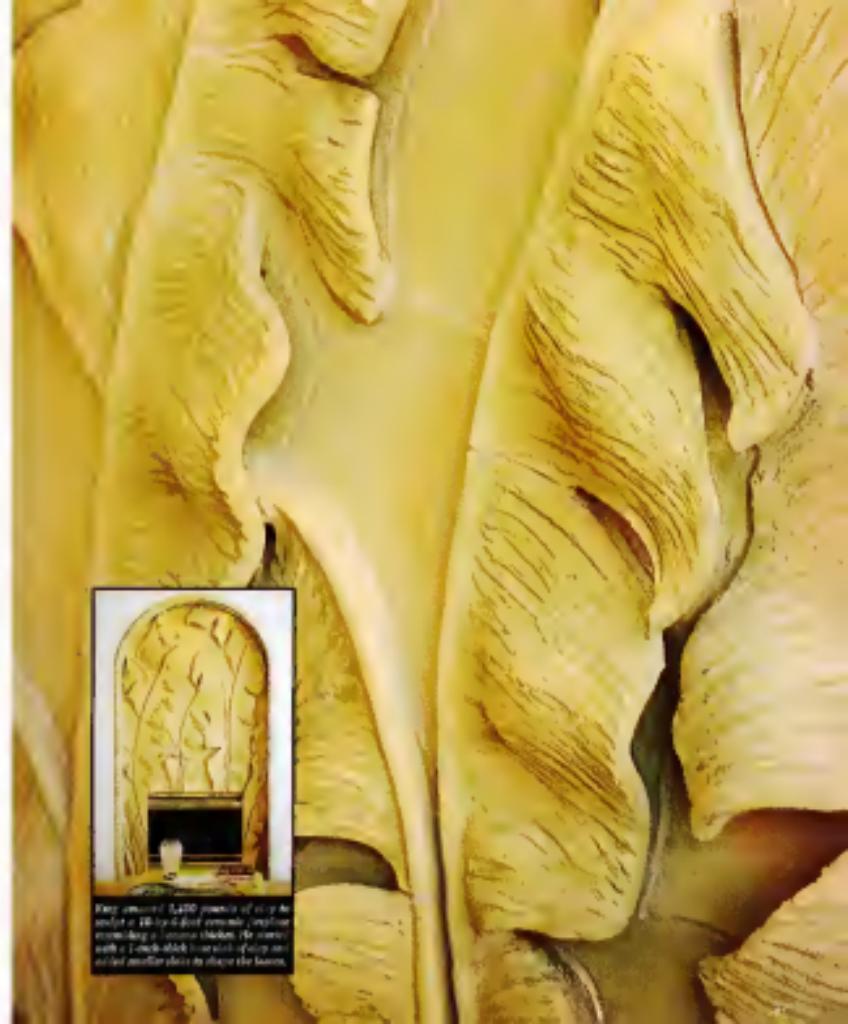
While still soft, the large sculptures are cut into pieces and assembled. They are left to dry for two to ten weeks before being sealed with oil-gum paper and painted with a chemical glaze. Melded is a walk-in kiln heated to 2,300 degrees Fahrenheit, the glassy crest



TOP: Using an overley pattern marked with a pencil on a sheet of clear plastic, King creates a design on one side of clay for a relief panel and repeats the design on the other side of the clay with a claycutting tool. At right: A clay sculpture of a seated figure, King's first clay sculpture, titled "The Thinker." Below: King's clay sculpture of John F. Kennedy, a bust of the president made of clay.



King created a 20-foot-tall sculpture of a seated John F. Kennedy, a bust of the president made of clay.





a flower garden of colors and textures. The fired pieces are loaded to the kiln and covered by industrial epoxy and burlap—King can make about 10 original architectural pieces in a week.

"Going full bore, that's all we can do."

King knows pottery who could make anything with his hands. Some of it comes from the texture of clay in his palms—the cool, lush softness that marks fingerprints. And some of it comes from the glaze he takes in looking. He has learned what's play into a job, while others must always know the best. But the passion goes deeper too.

"I can't say," he says. "It's there. I'm compelled. Any manner of creation is striking something. At that same, it's a religious quest. 'Have to do this myself.' You have to develop the shift to meet the challenges of material and environment, but a lot of people do that. Mason or baker aren't making objects, that's really. They are looking to find something in the materials. They will always want to do a little bit more." They don't measure accomplishment against the finished work, King says, but against the post-mastery of feeling those materials themselves each time they touch an object, whether a fireplace, a chair, a door or a house.

"That's the source, the wellspring."

The barns, King says, is infusing perfectionism with the eco-

nomics of getting the job done. "You can be so perfectionist that you can't make anything." He smiles and adds, "Why did God say, 'This is good' out foranity like he made man? What he really meant was, 'This is good enough. I'm going home.' Tomorrow is another."

Tonight, as darkness falls on his barn and his mind, King is satisfied that an object is complete for his finished last week is good enough. The 14-foot tall fireplace is a collection of fragments broken bricks and clay pots meant to look like archaeological remnants; Indian wood-block designs pressed behind shelter (one the day, insects from a series of huts) and a pair of hot, green brooches in names, grass cones and sleepy in stems, glazed spouts reflecting the sunlight, unglazed spots in still as dry mud.

Already, King's enthusiasm with doing a better job has ticked in. If he could remake the fireplace, he would go with a much darker-looking surface, less glowing light and more color—deep turquoise, matte lavender and the bright lavender of a Florida sunset. "I always know what a piece could have been," he says, "and that haunts me." That indescribably good feeling begins in the making itself. He stopped at the next job, as he will be disappointed.

So, how is absolute King's life?

Well, he has already mostly reveal the thoughts that have been swirling around in his head the last few days. Two dozen. It's a query not a philosophical search on how creativity and mastery of craft intersect, not a quest into the source of hard work and pride and inspiration, not a sermon on the modern condition of art. Hell, it's a poem. A song has appeared in the moon. To cool off, King has rolled his ponytail into a knot at the nape of his neck. Elsewhere is new pottery. Small's pottery, which has cooled enough to be lifted and carried and sealed in the vague backyed light.

"Beneath? We ride full. Look at this!"

Stood outside before the empty open kiln and very loudly enough for all to hear, "I've added three to address my lets." He stands near to have caught in a pose with her weight on his right hand, holding his glass in his right hand and at his waist, making his head with his left hand. He looks at the ground, doesn't speak. He goes quiet, then momentarily quiet. He finally looks up, his face and his eyes still need, and discloses, after all, to tell them something of what has been or has not.

"People ask me why I do what I do. I make very little money. Why not create a line of pottery that can mass-produce and make a decent living?" Well, tonight is the reason why I don't. Back stage. I let loose, or anyone makes a piece of pottery, it's a need for doing it more pedantically. Each piece is like Atlantis bursting from the head of Zeus—it is an idea emerging forth from your own head. And it's that sensation that keeps an artist going.

"I know people who come only with a lot of money. They think of their lives in distant places—make money young and be really unhappy and then retire and play golf the rest of their lives. I much understand those people. If I were to win the lottery tomorrow, I'd still be exactly what I do today. What I do is who I am. It's not a job. It's who I am."

"A friend once told me that making a ceramic piece is like work of mother earth and father fire and whatever is doing the cooking. It is this confidence of material and creativity that makes the object. She here, rough, we cohene mucus earth, father fire—and Kite." Suddenly, King drops down from his stool a sheet of wetka, spun mud, in a wide sweeping stroke, throws and smashes his globs inside the kiln. "To another earth, thicker fire and Kite!" ■



100 The King breathes fire: a 180-

-pound slab for the Adams' relief-style pool house oven. While Peter shapes a clay cylinder, Adams smooths. John shapes a dried wavy strip of stamping. "It looks kind of rag, but it makes a great amphitheater," Peter says.

King leaves pottery who could make anything with his hands. Some of it comes from the texture of clay in his palms—the cool, lush softness that marks fingerprints. And some of it comes from the glaze he takes in looking. He has learned what's play into a job, while others must always know the best. But the passion goes deeper too.

"I can't say," he says. "It's there. I'm compelled. Any manner of creation is striking something. At that same, it's a religious quest. 'Have to do this myself.' You have to develop the shift to meet the challenges of material and environment, but a lot of people do that. Mason or baker aren't making objects, that's really. They are looking to find something in the materials. They will always want to do a little bit more." They don't measure accomplishment against the finished work, King says, but against the post-mastery of feeling those materials themselves each time they touch an object, whether a fireplace, a chair, a door or a house.

"That's the source, the wellspring."

The barns, King says, is infusing perfectionism with the eco-



For his second house in Pleasanton, architect Michael O'Donnell comments, "King had to build a producer incorporating local pottery culture and his reputation." On the shelf directly above the fireplace, Small's pottery displays—Unterberger pottery shards the cooklike during winter on the beach.

Standing in the backyard naked? Not the first thing most people imagine as part of their morning ritual. But give it a try—shower outdoors for a week or two—and the open-air splash may become addictive. For a rinse after a hike or swim, the outdoor shower is certainly practical. But using one only has aesthetic and sensuous dimensions. From the simple childhood bliss of a cold-water hose on a hot day to the rapture of a long, warm, wet bombardment, showering alfresco is one of life's great under-reported pleasures. It turns a duty into an adventure; the morning shower into an exclamation point of delight. Imagine clear rushing water, blue sky, a refreshing breeze.

ATTRACTIVE SHOWER An outdoor shower is installed on the back deck of a vacation house in Rosemary Beach, Florida. Shaded by a large overhanging eave, the shower is surrounded by a white-painted wooden deck. The shower fixture is a standard chrome model with a handheld showerhead.

At the Curt Meyer family's vacation house in Rosemary Beach, Florida, the attractively simple shower provides the basics. "It's a nice place to rinse off the sand before you go upstairs," says contractor Burnell Elliott, whose crew built it just steps from the wild-rosemary-scented dunes.

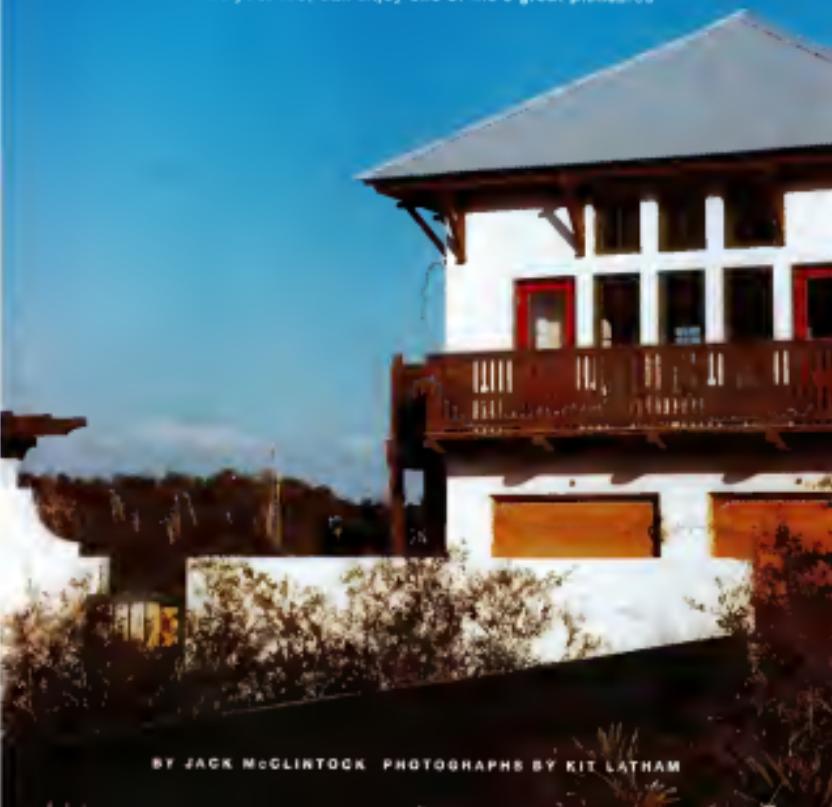
Architect Eve Wilson designed the 3-by-5-foot shower on a deck of the house's northwest side. Shielded by an outdoor staircase, it has a view of the Gulf of Mexico. For the enclosure, he specified 36-inch-wide pine pickets weathered with a dark brown stain to match the exterior trim of the house.

Before the wooden deck was built, plumber Carl DeLong laid underground copper supply pipes, installing shutoff and drain-down valves inside the house's garage next to the water heater. (For outdoor showers that need (continued on page 104)



shower outdoors!

"A little plumbing, an armful of boards, a day pounding walls, and you, too, can enjoy one of life's great pleasures."



BY JACK MCCLINTOCK PHOTOGRAPHS BY KIT LATHAM



Mike DeLong, main project manager for the deck and parts of the shower, installs the shower stall. "These beams are the last ones to go up," he says. "We'll start the shower stall next week to make the house's exterior look complete." **CAROLYN AND RICHARD**



(positioned from page 80) to be wastewater, Richard Timchuk, T.O.H.'s plumbing and heating contractor, recommends hot and cold shutoff valves inside the house, plus a drain valve inside the shower. "That way, you turn the water off inside, take it on outside and the pipes don't clog up," he says.

Bruce the little shower designer at the Meyer house, DeLong and carpenter Mike Sants executed a complicated dance with each other and painter Michaela Matsu to do things in the right order. Sants had a massive wooden box to hold the piping and valves. DeLong fitted pipes together, running them the eight distance apart that are standard between the valves. He installed a four-inch flange in the mid-water line 2 feet above the deck, used brackets to secure the pipes to the framework and sealed the joints.

Next, DeLong put on the tag-tear-lather shower valves. "That's the look everybody wants that puts it—standard," he said. The valve is pressure-balanced, so that, if a valve flakes somewhere in the house, the valve automatically adjusts to the pressure to avoid scalding the person showering. Richard Timchuk says every shower, indoor or out, should have such valves. DeLong agrees; it's also consistent with Timchuk that, ideally, a showerhead should be placed at a height of about 5 feet, or that said at.

Then the shower can really function. DeLong stopped back to let Timchuk install the framing box, and Sants returned to let Matsu apply a coat of dark-brown oil-based exterior stain. With Matsu done, Sants stabilized it to score the face into the box so it cuts the pipes and valves, then stepped aside so DeLong could add the valve handles. By that time, Sants had returned with a pile of pictures under one arm and a nail gun in his hand. He had left several pipe valves scattered because, as Bruce Elkan said, "like strings to look pretty even though they're gonna pop out in the sun."

Elkan commended that, despite the sun's brightness and its two coats of mid-level exterior stain, traces of mold might have to be sanded off periodically. Those was-to-be seen about early, the shower would dominate the visual.

DeLong's last chore was to screw on the showerhead, one of the showerless types, as he calls them, big, round and shiny as a new hubcap.

Sants finished installing the picture on all three sides of the shower. Spaced 1½ inches apart, they let the pleasure hose run through a much higher priority than privacy for this shower, intended for rinsing used-off remastered bathers after a swim in the beach. Matsu stepped on some broken stain and the shower was complete, save the final run. Sants is enthralled on the water, and it sprayed art beautifully, splashing across the deck and onto the hot sand. ■



1. The frames for the shower's 3-foot-6-inch-tall double gates are oriented with a 4-inch clearance above the deck, leaving room for planter to extend within 2 inches of the deck. The gates swing out. 2. On the non-sloping side of the enclosure, Sants does up picture, without breaking the stain, at a height of 1 foot 9 inches. 3. Carl DeLong installs a floor drain spigot, perfect for rinsing sand-caked toes and a drowsy rinse.

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The completed outdoor shower stall at Bruce's only truly Raincheck

Shower talk

For the past 20 years every step-and-repeat night—radio or video, but no video, Mike Pollepiet has installed lots of Porcher Backyard showers in a forest. "We sit in under the porch and grill beers in a forest-and-grove, where she removes that board and sits in like she's there." The breeze through the pine trees is a welcome sound while you shower, she says with a sigh. "Please sit, the sun is in your eye and at night the wind-lightning doesn't get any better!"

She and her husband, Roger, Raincheck, built the shower themselves, starting with a base dug from a tree and making improvements every year. Here, the tips that Pollepiet learned from experience:

DRILLING. "It's narrow and small doesn't drill well naturally, dig some out and knock with a pencil," he says.

HOLES. Drill the shower far enough from the house to keep moisture away, especially if the house is wood. "The beautiful downside of this is obviously is that, as odd as maybe, one shower will be the dominant outdoor shower for the hot water to flow from the house."

VENTILATION. "Make sure the shower has good and enough ventilation through to dry out the shower. Otherwise you get algae and mold," says Pollepiet. Rather than building solid walls, use plants and harvested walls for visual screening.

SPACE. Allow enough "you don't sit公用 showers on the front porch or the walls like you do houses," says Pollepiet.

SHOWER. Provide a shower for showering, a stand for sitting—or propping up a head for an underwater pedicure. And consider installing an adjustable showerhead. "I like the spray of water. Other people like spraying water on their spray," says Pollepiet.

One last word of advice: Try showering in the rain. "It's really a great experience."



BULLETPROOFING

A HOUSE

AN INCREASING NUMBER OF HOME OWNERS, OVERREACTING TO CRIME AND VIOLENCE THEY SEE ON TV, ARE BUILDING FORTRESSLIKE SAFE ROOMS

As targets for assassination, the elderly couple from Las Vegas cut unlikely figures. He's a retired auto mechanic; she's a former real estate agent. They own little worth shooting aside from some antique guns, a stamp collection and a Winnie-the-Pooh. They live in an adobe-style ranch house in one of the safest areas of the city—the sort of place where a neighbor might be seen walking the dog while mowing a lawn inside a golf cart. "Still," says the former realtor, "with all we hear about on the news, we thought we'd be better off safe than sorry."

So the couple, who for security reasons asked that This Old House not publish their names, built a \$15,000 bulletproof safe room inside their house. If an intruder manages to break past the house alarm system and break in, the couple can dash into the plasma-separated walk-in closet off the master bathroom. With a quick tug, a 400-pound steel door glides into place and locks magnetically. The transom light above the door has been glazed with bullet-resistant glass. The fiberglass wallboard inside the room is thick enough to block the explosive force of a .44-magnum bullet. The 2-inch-thick steel door can repel even more. "You could pound it with a sledgehammer probably forever and never get through," says Gary Paster, a contractor from Westlake Village, California, who ripped

A laser receiver with a dozen pieces of polycarbonate plastic would easily absorb the impact of multiple bullets fired from a Colt .45. Polyethylene is the same completely transparent material used in shatterproof eyeglasses.

BY CURTIS RIST PHOTOGRAPHS BY MICHAEL LLEWELYN

HIDDEN FORTRESS

The most popular—and least expensive—way to bulletproof a house is to add a safe room. "In an emergency, it gives you a place to hide and wait for the police," says Gary Paster, a contractor who specializes in safe-room construction. A common location for such a bunker is in an existing closet or bathroom. To build the safe room in Las Vegas (see main story), carpenters Michael Baltimore and Marcelino Carpio Jr. added a sliding metal door to the inside of a walk-in closet [1]. Considering that the retired home owners were not likely to be targeted by kidnappers, Paster chose a $\frac{3}{8}$ -inch steel ceiling over a $1\frac{1}{4}$ -inch solid core door—which offers protection from a .44 magnum but not a more powerful weapon, such as a deer rifle. Paster left the raw metal door exposed rather than covering it with a wood veneer, so that would-be intruders could clearly see what they're up against—in hopes they'd flee. "They're not going to be stupid enough to stand there and shoot at a steel plate. But if they were, the bullets would bounce back and kill them," says Paster. "So, either way, you win." [2] Inside, he fit the room with a panic button so the couple could contact police and trigger the alarm system in an emergency. When shut, the electronic lock [3] can't be picked or pried open. "You'd have to be Superman to do it," says Paster. "Make that a couple of Supermen."



up the room. "You'd have to bring a truck in here and cut it—several times."

The Las Vegas couple are among a growing legion of home owners prepared to bunker down in bulletproof bunkers when disaster strikes. Motivated by fear of those both real and imagined, people ranging from Hollywood celebrities and international finance moguls to regular folks are equipping their houses with bulletproof entryways, windows, walls and safe rooms. "The type of system you end up with depends on who you are, how much money you have and how many enemies you have," says Michael Balowich, an installer for Paster. In California, for example, a wealthy and mysterious man spent \$225,000 to outfit his entire house with 1½-inch-thick fiberglass armor on the walls and 3-inch-thick glass on the windows—outlets designed to stop military assault rifles.

Of course few home owners are in danger of being military offenders. Intruders launched against their houses far that carries few home owners need bulletproofing of my sort. FBI statistics reveal that household burglaries—by far the most-common form of home invasion—have been on the decline since 1992, and dropped by 9.6 percent in 1996, the most recent year for which figures are available. Of the burglaries that did occur—at a rate of about 1 per 64 households—few involved guns. "Burglars usually don't carry them," says Robert McCue, a security expert and professor at John Jay College of Criminal Justice. "They know that if they get caught, they will face more serious charges." But in certain materials have arrived later in expensive armor, fire-resistant armors and other business vulnerable to armed robbery, but residential use remains another matter. "I don't know of a single instance where these materials have been successfully used in a home," says Jeff Feyens, acting director of the National Crime Prevention Institute in Louisville, Kentucky. While some people may have a valid concern about durability and safety, bulletproofing, say, says Paster, "for most of us, the threat really is just you out there."

Still, bulletproofing materials are clearly finding their way into new construction. "We wouldn't even think of building a high-end house without them," says one New York City-based architect, who insisted on anonymity out of concern he might compromise his clients' safety. And the materials are correspondingly expensive. Gary Paster's stock steel door costs about \$12,200, not including installation. A pair of bullet-resistant fiberglass wallboard manufactured by Safeguard Security Services Inc. of San Antonio, Texas, goes for \$13 a square foot, says company president James Trevino. A single bullet-resistant window—such as the one Trevino sold to the owner of a Texas boulder house—can easily cost \$10,000 to \$12,000. "The average family that makes \$30,000 a year can't afford any of that," says Trevino. "It's not even an option." Instead, these materials are designed for a clientele that, in most cases, goes beyond the mere well-to-do. "For these products, it's worth the \$12,000 or \$20,000 or \$30,000 just to buy some peace of mind," says Paster.

The choice of high-end materials typically boils down to guessing what type of gun an intruder is likely to use. In New York City, says Jeff Feyens, acting director of the National Crime Prevention Institute in Louisville, Kentucky. While some people may have a valid concern about durability and safety, bulletproofing, say, says Paster, "for most of us, the threat really is just you out there."

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Going Ballistic

Most manufacturers of bullet-resistant materials send them to installers.

Labor costs for independent installers in Northbrook, Illinois, the mid-range bullet-resistant glass—designed for its thickness (12 mils) or everything from shattering to fragmentation—can range from \$100 to \$1,000.

On the market in bullet-resistant glass are bullet-proof windows made of tempered glass or bullet-resistant glass. "We make what it is," says Dave Greene, a lab supervisor. "If they send it to us, we'll put it up and check it." UK installers check samples of the material. These glass units have a thickness of 12 mils. The material not only has to block the bullet from passing through them but also has no spalling or shattering of glass or other substances that could cause injuries to people on the opposite side.

Manufacturers labor to size and fit the levels of bullet-resistant protection. Level I covers items that can block a 9-mm expandable jacketed bullet; Level II the more powerful .357 magnum. Moving up still higher, Level III can block a .44 magnum, and Level IV a .30-06 rifle. These ratings are closely related to the products themselves. "If they were, you might have a bullet nail up to a brick window, look at the listing and say, 'Wow, hand over the money. You're only going to penetrate, and this is a Level II gun,'" says Greene.

Still, that calls for 1½-inch-thick windows, and 3-inch-thick wallboard. But in California, the likely scenario is the even more penetrating AK-47 assault rifle, requiring thicker protection. "Don't ask me why the AK-47," says Gaffney. "Everyone will be around writing shots in the West, so where are they going to have to use their rifle?" Concerns may be more realistic overseas, he says. "In Russia, they'll come at you with shoulder-launched rockets."

The nature of a homeowner's perimeter, as well as the depth of his pocket, dictate how much of a house gets bulletproofed. Surprisingly, experts say, the least effective protection simply is to dig a house with a bullet-resistant front door. "Nobody's going to shoot at you through the front door," says Carlo Gao,



"The safe room is like insurance," says the Las Vegas couple, noting happily with the bulletproofing installed in their bungalow's closet. "You hope you never have to use it, but it's there if you really need it."

**BULLETPROOF GLASS**

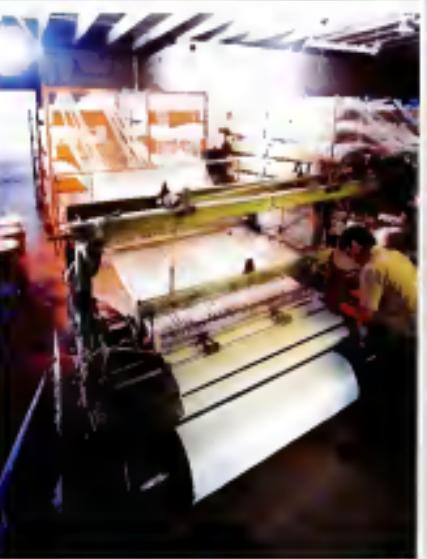
If it's thick enough, ordinary window glass can stop a bullet—but not spelling. The top analysts in the stack of left panels show layers of glass interleaved with layers of PVC that prevent shattering. At 2 inches thick, it costs \$1,440 per square foot. The cost for a 3/8-in.-thick window: \$1,180. A still more expensive type of window material is solid polycarbonate, a plastic that absorbs bullets without cracking and is slightly thicker than layered glass. The cost for the same-size window: \$8,300.

**GLASS DOOR**

An ugly steel door might send the right message to burglars about a safe room, but that same look would be depressing for the front of a home. One alternative: Solid wood doors with steel-reinforced frames or bullet-resistant glass doors. These doors, popular in federal buildings but also available for home use, come in maple, cherry and mahogany.

**WINDOW AND DOOR FRAMING**

A bullet-resistant door or window frame won't offer much protection if the frame can be bent through assault. "Once you break the door or the window, properly designed, the frame becomes the weak link," says Thomas Gaffney, a New York City security consultant. He had other experts line the frame with bullet-resistant metal (fiberglass, steel or carbon armor), which enables the door or window to provide an additional level of protection.

**JURY-RIGGED WALLBOARD**

Following a rash of jury rooms absconded in the 1990s, the federal government was shopping for a bullet-resistant partitioning. They kept with the idea of using sheet plaster, "but it's bullet thin," says Jason Trevison of Subsidiary Security Solutions Inc., in San Antonio, Texas. So Subsidiary created Armored Sheathing: fiberglass woven on a loom (woven and stitched to acrylic fibrill), then held together with a polyvinyl chloride mesh. The fiberglass fibers aggregate an impact to absorb the velocity of a bullet and prevent it from penetrating or ricocheting. Although labor-intensive, finished sheets of Armored Sheathing can be easily cutout, drilled and screwed like pieces on site. "Contractors just love it," says Trevison.



A security consultant in Allentown, New Jersey, "They're going to knock the front door down, then shoot you." That requires more elaborate protection, such as energy-werthy rooms. For one extremely unusual client, Caci installed a system that includes not only a safe room but also a secret passage leading out of the house—a sort of fail-safe room. While questioning in the safe room, the owner can hit a panic button to call police at trigger as soon as the house that passes out 125 decibels of sound, louder than what you might hear when taking directly at least of the speakers at a rock concert. "Unless you're nose deaf to that particular sound, you can't go in there," says Caci. In planning the system, he sized the room and requested to add an internal fire exit ladder as well. "What if the mud wall accidentally collapsed? They'd have a field of fire arms on their hands."

As with any home renovation, knowing when enough is enough is a challenge. "There's no one dimension, no single plan for these things," says McCrae. "And that can make them a problem to install." The variety and wearable quality of bullet-proofing materials adds confusion. The most expensive products, such as bulletproof windows, usually bear the mark of approval from Underwriters Laboratories. But cheaper products are also in use, such as 1/4-inch fiber-cement plywood. Although not specifically manufactured for blocking bullets, it can prevent intruders from smashing into a safe room—and costs less via the price of fiberglass. Most bullet-proof panels weigh plywood, and intruders are unlikely to show up equipped with a sledgehammer.

Unless they know what to expect. By far, the most effective weapon in any home defense arsenal is surprise. If intruders know that a bullet-resistant door or window or safe room is in place, they'll sense such the proper equipment to get around it. So home owners should keep their bullet-proofing measures a secret. "Your plumber or carpenter could end up being your biggest threat," says Fuster. "Who else has blueprint to your house, and how do you know they're not going to pass them off to friends who might be robbers?" When a house is built in earnest, Fuster typically shows up after all the other work is done to examine the other than his own cover and the house owners, know what's going on. "Surprise, surprise and surprise," says Caci. "Without those, you might as well have nothing."

With these classes installed completely, the Las Vegas couple—far whiter evil as large as the perceived enemy—feel safe knowing that if they hear a noise, they can hole up in their little fortress. "We've tried it out, and it's quite a comforting feeling," Fuster tells his husband. Still, the couple rely less on sneaking for older layer of defense to get them through a crisis than little bachelors fine (a dog whose name, for security reasons, is being withheld).

"Gunned, the only weight about 20 pounds," says the husband. "But what a hunk!" ■

marble, porcelain and wood

A strong statement in the master bath of the TV show's project house



One and a half tons of marble measuring and then gave a 20-by-20-foot bathroom the colors, weighty presence of a 1940s bomb shelter. "With the colors, we integrated everything: the strength and squareness of the building, no open areas," says architect Mark Dvorak. "We really wanted the industrial, institutional look."

Mark Dvorak steps on a floor pedal, and cold water from a spigot above gushes into a gigantic sink. Grinning, he starts to stomp out a bass-drum backbeat, shooting liquid dots and dashes down the drain. "Isn't this great?" he says.

Dvorak's water-pedal Buddy Ripsoule provides a hint that this master bathroom, at *This Old House*'s winter project in San Francisco, veers exuberantly from the ordinary. Features from the industrial world abound. Pedal fittings like these are common for hospital sinks so that surgeons need not touch a tap. The two hung-sheets sinks were designed to accommodate jockeys' maps and buckets. The marble wainscet once lined the hallways of corporate offices.

"We keep using the term institutional to describe what we are going for here. To some people, that sounds like 'mental institution,' and sometimes I think they have a point. But it really means that we want the lines clean, the details massive," says Dvorak. A successful store designer, he selected most of the colors, fixtures and details for this house.

The design aesthetic works—in the master bathroom and throughout the 1900 church that Dvorak and his fiancée, Louise Ann Bishop, are converting to a house. "Our padding patterns are train stations and old schoolhouses. Those are the kinds of spaces we love," Bishop says. That explains



Including a commercial-grade ceramic shower fixture, The Old Master plumbing and heating contractor Richard Tremblay, left, and master plumber Jeff Dresnak, right, have started work on the structure of the shower enclosure. "It's big enough for two," the owner's household humor is actually a punner designed for restaurant diners.

the preponderance, running from the sunroom to the guest bedrooms, of bristled nail, dark wood and marl-lacquer-ward door frames.

Dresnak says the 30-by-18-foot master bathroom occupied much of his and Bobog's resources from the start. "We have definitely spent a lot of time on that room." The extra effort shows in the bathroom fixtures design—it结合了 faceted, gleaming steel upper panels and bold slate ad stone and slate.

All of which surprised the TV crew. "We generally underestimate and do—a conservative design," says host Steve Thomas, noting that usage reasonably fulfilled in the era when the house was built. "Usually, that's what I'm after a simple straightforward. But although that design is different, it really succeeds. Particularly in an area like San Francisco, where you have design freedom, lifestyle freedom—it can make a statement."

Understanding the master bathroom requires getting a grasp on the layout of the whole building. It is, in fact, two—the one-story church, built just a few months after the 1906 earthquake, and a larger, artful, two-story addition that tumbles off its back. "We think it was added to the 1940s," says general contractor Dan Flommer. "But there's no record of a building permit, so we just don't know."

Dresnak and architect Barbara Chambers used the bathroom on the east side of the addition's second floor. There, an evening bank of three double-hung windows offered a particularly fine view of the spires of the San Francisco-Oakland Bay Bridge, often swaddled in fog. "We used the existing finished opening and put in new glass, vinyl and sashes," says Chambers. The three windows, encompassing about 30 square feet of glass, expose the sun and flood the room with daylight. Privacy, says Bobog, isn't a concern. "We'll have blinds, but we're not really in anyone's line of sight."

Moving light switches onto the room's own showcases 208-panel plus recessed-groove paneling. "I'd never seen looks like these before," says Steve Denkowsky, owner of Olympia Salvage, the pad in Berkeley where Dresnak bought the gear. "They are solid paneling from about 1900. I found them in a salvage yard in Lafayette, Louisiana, still in their crates. They had never been used." When Denkowsky saw them in Dresnak's warehouse, he immediately expressed interest. "We named them over and found they were stamped 'Douglas virginia chaco,'" says Denkowsky. The name of that Cincinnati manufacturer resonates in the unique-arts world. "The John Douglas company was a famous maker of high-end sofas. Gaudier stinks like this are very rare."

"The scale is so enormous," says Dresnak with a smile. "We knew these would be really fun."

But the sink presented a challenge. Each has only one fixing bolt, instead as the backsplash. Mounting the sinks flush with the marble wainscoting would leave only 5 inches between backsplash and wainscot, not enough room for the 4-inch brass tap that must hit cold water before it flows through the spout. The plan, says Dresnak, suggested an innovative solution: casting long foot pedals for the hot and cold water lines so the tap could be placed below the sink, and the mixed water would get sent up a single 16-inch feed tube to the spout. Dresnak embraced the plan.

Further obstacles



ABOVE: Radiant limestone accents grace the main bathroom's floor and walls. LEFT: Polishing a massive onyx slab took some convincing: with an 18-inch diamond-impregnated blade, two contractors start a 1½-inch marble slab to length. FAR LEFT: In the bathroom, they set a 300-pound section of marble wainscoting into position.





PLUMBER KNOWS BEST

Antique sinks, tubs and fixtures have endless character and charm compared to modern, smooth, shiny-light bathroom accessories. Small wonder that San Francisco Bay Area residents esteem the Ohmara Bathroom plant in the Mission for elegant Victorian claw-foot tubs and mosaic tile-top fixtures.

But Jeff Devos, master plumber for 25th Old House's project in San Francisco, offers a current: the almost and the not-yet-possible: sink or tub, but still with modern fittings.

"The fitting looks like those old sinks are a variety of sizes, but that's really not a problem," he says. For Marc Dennis and Louise Anne Bishop's modern bathroom, Devos used new fittings with a vintage look, left. "For their guest bathroom, he was able to dig up a vintage shower fixture [in just six weeks] and make a few small revisions [so] it fits the [vessel] tub," says Dennis. "After you've been working on this for a while, you called additional plumb [that] can really help," he says.

"Check this out," he warms, handing a pair of oh-so-ancient 10-plus-year-old, Corianite pine [faucets]! interior, and he explains that the valve assembly will leak. "Replacing old fittings like this is tough," he says, adding that many new fittings conveniently mimic their old-time counterparts. "Generally, if you can stop away from using old fixtures, you are much better off."

arose. Mounting the sinks directly below the bank of windows made the typical mirror-and-light-over-sink configuration impossible. So Dorsch specified light fixtures that swivel out on cast arms attached to the wall. And his mirror solution is casually elegant. He simply propped a small antique mirror on the 6-inch deep ledge above the sinks.

Light is Dorsch's passion. Any trend-space designer knows that bright spots move product, while pools of dim corners lag growth so along with the swing-out fixtures, he specified four-foot five-inch recessed halogen lights. Suggesting ship's lamps or Porsche headlights, the round lights range by brushed stainless-steel enclosures from don't-pair-with-industrial troughs. "There are actually overhead fixtures completely sealed and gasketed," Dennis says.

Closer behind the sinks, the bath room's boldest feature is a 40-inch-high marble waterfall. The pickup at Ohmara salvaged the 54-inch slab from a hallway on the 17th floor of San Francisco's Chevron Building during remodeling two years ago. Dennis says he negotiated them by saying:

"Everyone falls in love with this tile," says general contractor Dan Plummer. The marble slab with plate affixed the underlying red clay compacted through a felt from the base, is already half 100 years old. The almost-12-inch-thick slabs will assume another 10 years longer after a long dry

gap: a top-quality thin-set mortar atop green-board, pressing each slab into place and making the joints with epoxy caulk to match the marble gray where necessary. "The waterfall extends me a 21/2-in. schoolhouse," Bishop says.

But no educational institution—whatever decade—ever boasted a shower like the one here: 4 feet deep, 5 feet wide, and, like the rest of the bathroom, blessed with an airy 10-foot ceiling. It's deep enough for two ("We'll save water," says Bishop, laughing.) The stainless-steel door features a panel of light-diffusing frosted glass; glass columns keep in treated glass—a look so arresting that Dennis' colleague Mark Bishop will seal the site for future bathroom photos.

The shower stall begins as a green-board-lined enclosure with a cast iron drain. In most modern American renovations and new construction projects, waste and trap pipes—and sometimes even supply pipes—are made of PVC. But any such of pipe in that heating at either copper or cast iron. "That's San Francisco style," explains Dennis. The law was passed through in the 1970s by zoning leaders who feared that the use of plastic piping, less labor-intensive to install, would lead to health. While the writer may seem extreme, particularly for ventilation pipes, there is no denying that cast iron does not readily allow a bacterium to grow in the shower stall directly above the kitchen.

TO H plumbing and heating contractor Richard Tashaway points out another mark of bath quality: the pressure-balancing valve, a copper cylinder that links the shower's hot and cold supply lines. A small plunger responds to a drop in pressure in one line by immediately dropping pressure in the other line proportionately. "At the rate, we've got just 50 pounds of water pressure. Sorry at the water," he explains. "So without that valve, you'd get the fire-hydrant factor. Whenever someone turns on the hot water anywhere in the house, the faucet in the shower would freeze." The valve averts that game-banging, marriage-crushing scenario, Bishop says. "The adjustments you're mostly stay true to each other."

To waterproof the shower stall, Coffey used asphalt-coated paper to the green-board, then sealed and applied red diamond-mesh latex to the paper. Next, he installed a mix of waterproof mud, lime, cement, sand and water on the back. Once the mixture set, he inserted it with their set monitor and began sloping the white tile in the same rapidly mixed running-bond pattern that green-tileplasters employ on New York City subway platforms.

Adjacent to the shower, the toilet occupies its own enclosure, separated from the rest of the bathroom by a door with another recycled-glass panel. "Putting the toilet in a separate room—in the water closet—was one reason an Victorian houses," Dennis says. The fixture itself is the water-conserving 1.6-gallon version mandated by California code.

The final touch: Walkers selected and stained that last rustic-and-primitive Douglas fir original floor to a burnished mahogany color. The radiant heat system installed underneath will keep the floor gently warm for early morning loo's first.

Although the completed bathroom's look is clean, smooth and elegant, it evokes cornered mosaics: Steve dubbed it "romanticized industrial, sort of upscale funk." But Bishop's assessment is more revealing: "It sounds weird, but I feel comfortable in New York subway stations. For me, this is just a comfortable place to be." And she doesn't even need a token to get in. □



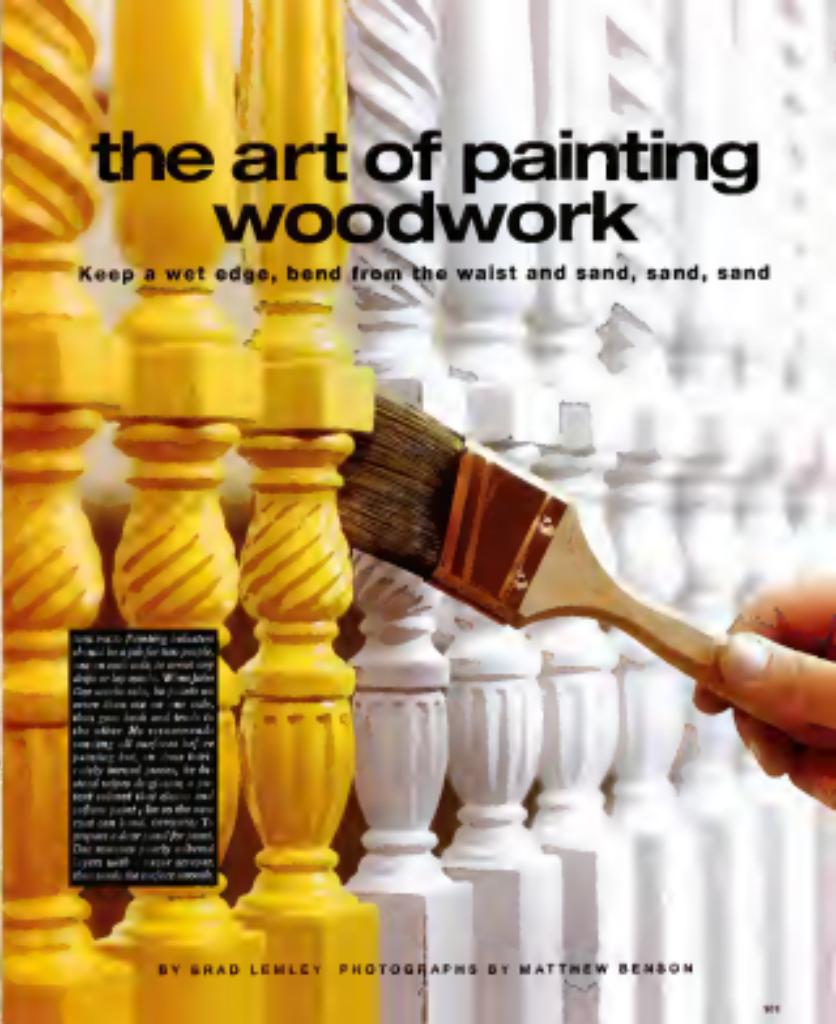
PHOTOGRAPH BY JEFFREY L. COFFEE



Feet planted, a burly arm extended, John Dee presses his paintbrush against the door and begins to bow. The action suggests obeisance at a Shinto shrine, but Dee picks a less reverent analogy: "I look like a figurine on a cuckoo clock." Sublime or ridiculous, he bows in service to his craft. "If you make the movement with the large muscles of the waist, instead of the arm, you get a truer vertical stroke," Dee says. Sure enough, the ochre wash he applies to the stile is as sharp and straight. (continued on page 102)

the art of painting woodwork

Keep a wet edge, bend from the waist and sand, sand, sand



John Dee: Painting includes should be a job for the people who do it best. When John Dee paints, he paints to please others, not himself. He looks and bends from the waist and bows to the other. My recommendation: use only all surfaces before painting, but, on those that have rarely been used, use the deepest colors. Use the deepest colors diagonally, or the most vibrant blue, green, and yellow, paint, for the most vibrant one, brown, etc. To prepare a color, sand for sand. One receives a truly different layer with a paper surface that avoids the previous ones.

BY GRAD LEMLEY PHOTOGRAPHS BY MATTHEW BENSON

(continued from page 108) on the surface of a new highway.

Among the construction arts, painting is the least likely to uncover this kind of on-deep analysis. Plumbers, electricians and general contractors all hold licenses, or their skills command respect. But painters not. Meanwhile, he observes with pride for his sonness, "Most people think you can paint."

But painting doesn't differ from finish carpentry. Only specifying, measuring, time-tested techniques will produce a fine product. Dey says that's particularly true of repairing weathered woodwork such as doors, windows and trimboards, the most difficult challenges he faces. A full-time painter for 26 years, Dey has learned his brushwork to achieve what he holds jokingly terms the obfuscation-compromise finish. "If you take a perfect, smooth, sharp-squared lacquer job at your client—and ask him that you won't achieve it," he cautions, "that if you shoot for perfect, you'll fail miserably. That's a good place to be." So why not take a slice off the hedges and

spray paint it? "I'd do that," Dey says, "but it's almost too slick, especially in older houses. I like the hand-done look of brushed-on woodwork."

The most important, most tedious—and therefore most neglected—step in the journey to painting excellence is proper preparation. First, Dey determines how well the existing layers of paint stick to one another and to the underlying wood. He probes peeling paint with a pencil knife. If he finds a weak link between the coated and dried coats of a seven-layer finish, for example, he'll concentrate on stripping down to coat two.

Even an apparently perfect paint surface can hide weak adhesion below. Dey uses tacks by smashing down a 4-inch square section of clear tape, then jerking it away. At this particular job, a 1903

Gingerbread-style house in Greenwich, Mass., he finds the tape picks up silver-dollar-size chips of old paint. "See," he says. "The blue can't adhere to the left coat underneath."

Because this house, like many built before lead paint was banned



One paints a new-painted pocket door the same way as any painted trim. He first paints the moldings surrounding the panels, then the panels and last of all the rails and stiles (the horizontal and vertical pieces, respectively). To prevent lumpy lap marks from drying on the rails and stiles, he carefully slopes up the panel edges before he paints. While applying paint to each area, he paints the finish away from the edges and corners, where it might collect in drip-prone globs. Stroke

direction doesn't matter at this stage but, once the paint is evenly absorbed, he must paint the top of the board in a gentle arc to the direction of the wood grain. When the green changes direction abruptly, as it does where rail meets stile, Dey doesn't end his brushstroke abruptly, because that would leave behind an ugly instance of paint. Instead, he paints across any joints that fall in the path of his brush. He inscribes out the overlap when he goes on to touch the second part



The bin of dried paint and primer that collects in spilt paint cans will earn a finish. When Dey runs paint from previous jobs, he always filters it through a paper funnel with mesh at the bottom.



In 1978, undoubtedly conscious of mass finish, Dee items a respirator and full-body coveralls. He tools the work area with plastic sheeting and duct tape before he starts scraping. On flat areas, he uses a razor blade in a wallpaper scraper and pushes it until he can no longer penetrate paint to come up. With a putty knife, he then chips off the grooves where the loose panels meet the sides and rails.

After scraping away most of the offending blue oasis, Dee begins to sand. On the flat areas, sanding paints into somewhere between a fine saddle and coarse removed, so it's a fair bit that most weekend painters skip this step—a huge mistake, says Dee. Sanding, he adds, ensures that paint will adhere and eliminates the dips, rises and brush marks (called rope) left by less skilled predecessors. "It's a really bad, you can use a random-surface sander on the floor and hand-sand the molding." But it's a delicate combination of criticism and hard work, and he doesn't hesitate to use uncloaked muscle power. "When I had a job," he says with a hint of pride, "I typically sit at least as much time as standing and when I'm at the job, I do it to painting."

In 45 minutes of steady, noisy motion, he grounds the door smooth with 220-grit sandpaper followed by an aggressive round of 120-grit steel wool.

Dee fills gouges with vinyl spackling. Because the stuff shrinks as it dries, he saves time by monitoring it slightly above the surface, then sanding it flush when it hardens. If he finished it first, he'd have to go back and fill the sinks again.

Final prep step: Dee thoroughly vacuum the door's surface, then wipe it down with a steady, dust-collecting handkerchief known as a tack cloth.

Can we paint now?

Not quite. Dee gives a quick coat of paint and pushes a ragged t-shirt before stirring. With previously applied coats, he follows up paint skin with his rag, then filters over the door, bags and dried bats with a 17-mm disposable paint strainer. Used paint has also worked but doesn't hold a funnel shape as surely.

For his first coat, Dee brushes on an unusual underbody primer, but he resists over oil paint. "It's always a good idea to prime, especially if you've done all that sanding," says Dee. To top-coat woodwork, he prefers alkyd (oil-based) paint in water-based latex. "I find that it levels better; it dries more slowly and keeps a wet edge longer." He applies the alkyd with a \$10.99 tyron polyester brush 2½ inches wide with a forest as opposed to an angled toe. Synthetic filament held less paint than natural bristles do, he says. "With bristles, I'm forever picking broken ends out of the paint."

Dee starts by painting the panels, working each one from the edge to the center. "I'm conservatively putting the paint out of the sides, where it wants to collect," he says. Unevenly distributed paint is a major cause of age, as are overworked tools and undercooked oil. Once he fills a panel with horizontal and diagonal strokes, he "tagu" it with a relatively loose few brush strokes at the top of a panel; he pulls the brush down and back up again, gently leveling the surface.

As Dee finishes each panel, he reaches for the leap of his painter's pants, where he keeps a corner rag slightly dampened with thinner, and wipes off the surrounding rails and rail trim. He follows his fundamental painting rule: If he cannot keep a wet edge, he makes sure that wet-and-dry edges meet at a sharp corner. Otherwise,

slipped-over paint dries and forms roughly raised areas.

When all the panels are done, he paints the sides and rails. He begins at the door's top, spreading the paint in all directions, then tops off only in the direction of the wood grain. Advertising to the maximum the wet-edge rule, he paints and tops off all the way to the bottom, covering both rails and rails at his gait. But that can set in lap painter back onto the panels or the rounded edges. "If you weren't that steady, you could let the panels dry here. Then if anything slipped on the panels, you could wipe it off."

The door dries and gleams; Dee pauses to admire his work. The clue he has left is



Prep Tricks

- 1 It doesn't require heavy equipment to detect how well paint is adhering.** Once just squeakers down a piece of clear tape, then pull it back to see what, if anything, has stuck to the bottom. This test shows Dee how many layers he has to scrape off.
- 2 Use putty scrapers across the flaps with a wallpaper remover and pull scatters along the panel's edges, where paint buildup is particularly acute. Then pull scatters for debris work from a long-handled tongs-like tool made with three cutting edges.**
- 3 A scraped surface needn't be the scrubbed, bare-bones kind.** Include flexible foam sanding sponges (for the corners or recesses) and open-cell silicone carbide sandpaper with no-clog coats of abrasives (for the flats). It folds flat and stays dry in thin air so that the grit-coated faces don't scratch each other, a trick that can make paper last considerably longer.

over old paint. (On bare wood, he uses a peeler instead.) "It's always a good idea to prime, especially if you've done all that sanding," says Dee. To top-coat woodwork, he prefers alkyd (oil-based) paint in water-based latex. "I find that it levels better; it dries more slowly and keeps a wet edge longer." He applies the alkyd with a \$10.99 tyron polyester brush 2½ inches wide with a forest as opposed to an angled toe. Synthetic filament held less paint than natural bristles do, he says. "With bristles, I'm forever picking broken ends out of the paint."

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The steps that follow the painting never take long, but they're critical to a good finish, as it did when he painted the front door for *This Old House* project in Salem, Massachusetts. "It was my first time working with the door, and I wanted to make a good impression," he says. When he finished, visitors could almost see their reflections in the door's glossy black surface. Later, another of Salem's historical committee representatives, house owner Deborah Gaines, brought a metal door from an antebellum house that only wood was allowed. Gaines had to use the integrated commissary straight. "Making the door as smooth as metal wasn't my aim," says Dee with a grin. "If you wanted to shave what we could do with paint." ■

stop those bugs

A focused attack—indoors and out—can rid a house of cockroaches, ants and other persistent pests

EVEN AFTER HIRING four pest-control companies in three years, a Florida family found going into the kitchen at night, switching on the light would reveal brazen cockroaches crawling everywhere. Boxes were bent aside, as bugs were always piled in the tub. One day, a 19-month-old brood fell off the ceiling onto a visiting sister-in-law. The fourth pest-control company, adnbow ledge at last that sprays weren't going to work, turned to Richard J. Brenner, who hunts down pests the way a canine patrol carries out a search-and-destroy mission.

Brenner, a medical entomologist and research leader for the U.S. Department of Agriculture's integrated fire ant and household insect unit, arrived at the house with an odd armful: 108 puppy-pant cans, powdered dentists' grain and a computer. He smeared petroleum jelly and mineral oil 15 inches down the cat's inside run, as if painting a hand pan. He added the grain, placed the cans throughout the property and waited for cockroaches to fall in. Trapped by the slippery cans, the bugs were waiting when he went back to record his catches. He punched a few buttons on his computer, and out came a color map with little rednesses indicating roach concentrations. The four peaks corresponded to an oak tree with mouse holes whose branches had fallen off, so two big palm trees, mysteriously, to the flat roof above a former airport enclosed to make a Florida room. "So we went up there at night with flashlights," Brenner says. "Sure enough, it turned out that the flashing was kerosene. The cockroaches were living behind it. It was the ecological equivalent of a tree hole." A dryer vent was their highway to the house. One application of poisoned bait, and the plague was wistly wiped out.

This precision targeting is far from the usual approach to fighting cockroaches, ants, silverfish, spiders and all other small hard-bodied household invaders. Usually there's a declaration of war—but no focused attack. Some people attempt to stave the insects out of the house, becoming fanatical about cleanliness. A worthy strategy, but it's rarely sufficient. Other people set a bug and reach for spray—an impulse that adds up to \$250 million to \$300 million in annual sales for companies that make aerosol insecticides, estimates Bill Robinson, an entomologist at Virginia Tech's urban pest-control research center. "We do take some pleasure in watching the little roach die," he says. And the sprays go on killing for a while (two days on stainless steel but two weeks on live wood, which is more absorbent). As a long-term strategy,





ONE WOMAN WHO BATTLED ROACHES AND FINALLY WON

Barry Maguire shared her one-bedroom apartment in Portland, Oregon, with an extended family of about 10 roaches. "I used to eat cereal every morning," she says. "I'd wake up, lay my head down, with my feet up. If I laid an entire meal to rest for me, it just got eaten."

When common roach traps didn't do the trick, Maguire, who had no access to insecticides, set out bread to lure the insects to her kitchen. As if at war, she fought the bugs with her bare hands, until one day she found a cockroach in her mouth. "I wasn't going to fight," she says.

Eventually, Maguire made the decision to spray the powder along baseboards, into the crevices of cabinets and behind her stove, where the insects were certain to walk. She did this using a plastic dishpan bottle, and her roachless problem eliminated. She then documented the success story, creating a website and blog, *RoachFree.com*, and the feedback came in fast. "The readers lack it all," she says. "They're sooo dead."

Hopkins still hasn't eliminated the roaches entirely. She probably won't until she gets a dog, she says. "It's been a year since we got our dog, and now he's got them."

However, spraying isn't effective. First, pesticides tend to kill only the less hardy insects. A few survivors can multiply into a whole army of resistant bugs. Also, sprays often kill only deer soldiers without troubling leveling pliers, either made of stainless steel or whole house perimeter spraying offered by many pest-control companies isn't focused, Breitner says. "It's like taking a sledgehammer and hoping that one of your enemy platoons gets hit."

He has never forgotten a point detailed by one of his professors, University of Illinois entomologist William R. Powell. In any management program, intervention is more successful if focused while the ranges are concentrated, insoluble and accumulative. Thus, C-LA, strong weak at many doses, Breitner says. "If you're going to clean up air pollution, where are you going to do it? At the smokestacks. It's a multi-layer strategy—exactly what the Japanese did at Fukushima."

Cockroach traps can be considered clean almost any container if the inside rim is greased. Bremner buys with powdered poison, a by-product of alcohol distilling, because it's not greasy. Dry dog food or ramen also work. Purchased traps can be used, but the cost adds up. Each bait station actually detects cockroaches a day within 4 feet, and traps are needed throughout a property to monitor for most types of the bugs. If German cockroaches are the target, there's no need to survey outdoors. These pests live only in heated structures—but sometimes in surprising places. Household items make prime habitats. Once, Bremner found 40 cockroaches in a neighbor's hollow leg.

It's often possible to get a moderate cockroach infestation under control without insecticides, merely by killing bugs trapped in the containers. "Leaving the cage in the sun is the easiest way," Bremner says. For bigger infestations, he recommends replacing insect control traps with poison sold as child-resistant packages. Unlike sprays, bait stations don't contaminate surrounding food. The ingesters eat the long, however. "Don't buy something for the kids—just for German roaches—if you've got the big ones," Bremner says. "They won't eat the long traps." If roaches are breeding in a tree hole, as he often finds, he places the bait in the tree's base.

With area, literate changes protocol. "They send out fliers, who go back and tell everybody else where the food is," he says. "If you trap the fliers, the message never gets back." So he burns the signs with orange jelly cooked with sugar water and waits for next visitors to follow. If borders perish, he replaces the corners with new heat stations.

This approach still requires

using all sources from the outside and eliminating the pests' food and water, but it should make those choices more effective as well as identify the reasons to focus on. Cleaning cracks and crevices doesn't demand special skills, but many people never get to it. Some pest-control operators perform the service; the most likely prospects are exterminators who offer integrated pest management, often noted in IPM in the sidebar page 96. Eddie, service director for Standard Exterminating in Queens, New York, charges \$80 to \$100 per room in an apartment and \$125 to \$150 per a house. He fills big gaps around pipes with copper wool, which rodents can't chew through.

Cleaning is most effective when the exterior perimeter of a house harbors few insects. Helpful measures include trimming back vegetation, removing wood-chip mulch, replacing windows or leaking fixtures and closing plants that collect day-old soil where no need to invite new the house.

Indoors, a light application of boric acid, crystals derived from mineral boron, can deter pests that do not have to enter. It can be dusted behind stoves or refrigerators or applied loose around hot-water tank-circuits. The powder, a stomach poison, is effective against cockroaches, ants and many other insects. Two other powders can also serve as barriers because they are deodorants. Silica aerogel abhors the waxy coating on an insect's exoskeleton. Diatomaceous earth consists of rough-edged particles that scratch the wax and cut into the shell. Even with all of these measures, however, at some point it might make sense to decide how many bugs are tolerable.

"Don't assume that every bug is bad," says Brad Cawthon, curator of arthropods at the University of Washington's Burke Museum. Spiders, for example, dine on everything from cockroaches to bedbugs. "The larger the house spider, the more household pests it must have eaten to get that size," Cawthon says. Keeping this thought in mind may make a little easier to let the house ante less awful.

Cockroach Havens in a House in Gainesville, Florida

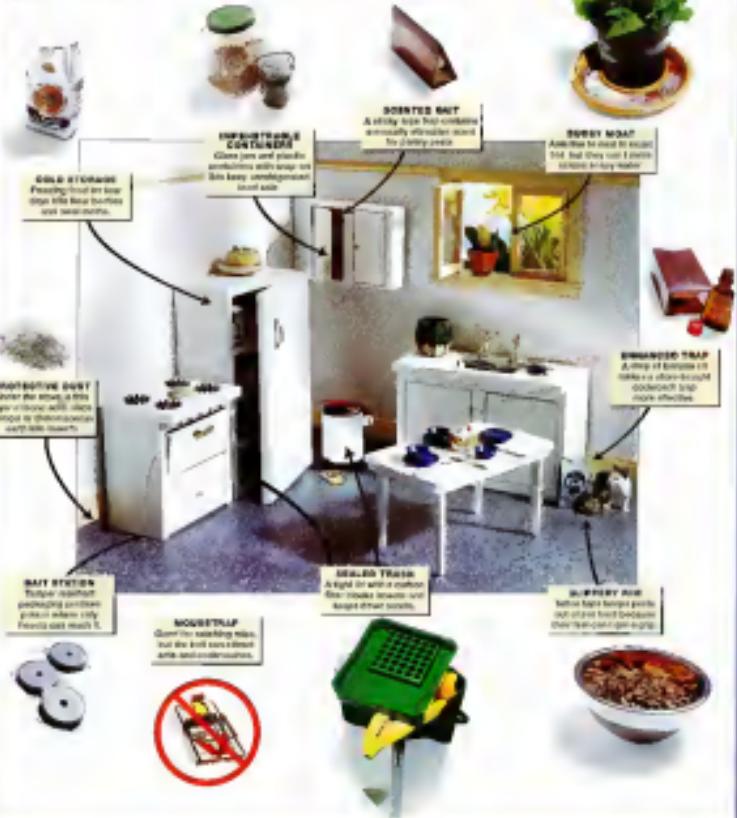
On Richard J. Bernauer's map, pokey yellowish mound locations—our public, left, as well as east, and the west of the house, outlined in yellow. Color dots represent:



Courtesy: Richard J. Bernauer, University of Florida, Gainesville, FL

BUG-PROOFING A KITCHEN

Hand-to-hand combat with insect paste is futile if they have all the nourishment for survival while you're not. Systematic changes can make wonders. First, as they say at the end, "Do Not Feed the Animals." Cut off access to moisture; cockroaches can survive on water alone for six weeks. And eliminate shelter: "The more hiding places, the greater the number of pests your home can support," says Patricia Zampoli, an entomologist at Clemson University in South Carolina.

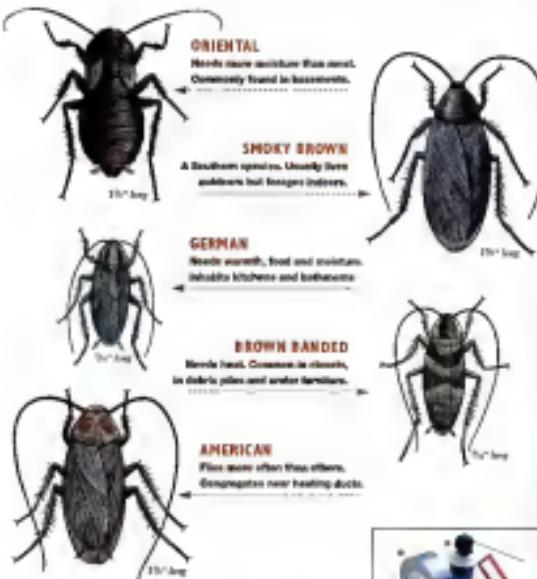


THE BUGS IN YOUR HOUSE

cockroaches

Cockroaches have been around for 300 million years. Yet instead of being revered, these insects are a major annoyance. Researchers believe they are a major cause of allergy. Last year, the New England Journal of Medicine published a study that found proteins in cockroach waste were the most common trigger of asthma among 450 university children.

Insects control include poison bait stations, baits and crevices, and dusting. David Bowers of the University of Florida, which is related to the common cockroach, dentritic preferences can be gauged, but small amounts of natural predators are relatively harmless to cockroaches. Androis sulfures should keep in mind, however, that even a little pyrethrin can trigger allergic reactions.



GEAR FOR A COCKROACH SAFARI

- Compressed air (to) to root bugs out of holes.
- Plumbers snare (to) for peering into crevices.
- A yellow light (to) or a flashlight with a yellow filter (to). Darkish, like dusk insects, can't see this part of the spectrum.
- Dust bags (to) to avoid off-gassing bugs.



pantry pests

Worms and pantry moths multiply whether grain is processed or stored. Eliminating these bugs is nearly impossible. Since products sold in stores usually contain eggs or larvae, says Dr. Philip Chagnon, an entomology professor at North Dakota State University. The best strategy is to create food into tightly sealed containers, so no infestations can spread. If small moths appear, change the food by freezing it for four days at zero degrees Fahrenheit, or by baking it at 130 degrees for half an hour. Any debris must then be sifted out. If moths or larvae show up outside containers, clean the cupboard thoroughly. It may help to sprinkle borax next to carrots and to set out pheromone traps, which use the insects' own sexual scents to lure them to sticky tape.



RED FLOUR BEETLE
Burdensome insects, especially if you're a foodie. Stinks, poisons, fat and carbohydrates.

Larvae damage stored grains.

Carpenter and sugar ants are the most common and vicious. Imported fire ants, a scourge in the South, become particularly vicious when disturbed. All are drawn by food clinging from insects to surfaces. Keeping the house squeaky-clean helps. Some types of sugar ants like nests in a line, which makes finding and sealing them entry point easy.



CARPENTER ANT
A massive structural pest. Comes into building to build a nest, often in moist and rotting wood. Very moist presence indicates that the nest is probably within a beam's thickness. If ants are absent in winter, the nest may be in an unheated wall or eaves.



ARGENTINE ANT
A sugar ant. Does not sting. Walks in lines.



IMPORTED FIRE ANT
Bulky, large insects, audacious. Flying is possible, even dangerous to children. Stings painful, fat and carbohydrates.

spiders

The most effective control is enclosure—repelling screens and sealing cracks. Weatherizing works if the bug is a repelled crawler. Destroying spiders has little long-term effect, says Seward Archibald, a Rod Carew of the arachnid world. The indomitable house spider will simply spin another web, and dusty cabinets mean the spider is an easy target in remedial anyway. The frightening aspect, however, is worth remembering that in North America only three spiders—the black widow, the brown recluse and the hobo—can really harm a human. These spiders normally stay out of sight, being only if picked or trapped under stones. Other spiders are beneficial, helping to reduce the number of bugs in a house.



BLACK WIDOW
Found in west of the U.S. Less than 1 percent of bites in humans are fatal.



HOBO
A Northwest pest. Bites may become infected and take months to heal.



DADDY LONGLEGS
The one "spider" that many people know—but it's not technically a spider.



BROWN RECLUSE
A Southern species, also called a violin back. Bites cause persistent scars.

HUNTING DOWN ANTS WHEN THERE'S NO TRAIL TO TRACE

Tony Dahl is a pest management specialist at the nonprofit Bio-Integral Research Center in Berkeley, California, but the true Argentine ant control he espouses is not much appreciated in commerce. "In the past, I'd follow an ant trail back to an out-of-the-way spot, then put out one of those impregnated bait stations. The ants take the poison back to their nest. This time, though, I wouldn't know exactly where to place the bait."

Dahl says she has learned from experience that ants can build nests inside a house, often in the out-of-painted places. As she walks her house plants outside and inspects the pots for insects or debris, "The ants don't like wet soil," she says. "They'll actually make little drainage holes in the soil to create a water and escape track over the soil."

But Dahl keeps looking out around the house until, one day, she注意到 a small earthen mound—and just pressed handfuls of them. Apparently, the little mounds had built a nest high up, before a user watered and out of the way.

"I took the red蚁 in the sink and dumped out half a cupful of ants," Dahl says. "Tearing on the top, she crawled down down the drain.

And the laugh. "You don't think your house is a wildlife sanctuary until something like this happens."



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don't exactly
have a
green
thumb...



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folks in the
red vest.

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RAIN

ROBOTS



SPRINKLERS GROW WHEN NATURE DOESN'T

For most Americans, a front-porch means an ornamental island of lush grass. Yet, without the humble brass sprinkler, houses might still be lawns. In 1873, a man named Joseph Lounsbury of Buffalo, New York, patented one of the first ornamental lawn sprinklers. But he did not receive the "patent office of an attorney." His Portable Fountain and Lawn-Sprinkler featured a nozzle hidden in the sheath of an all-in-one. Since then, sprinklers have evolved to deadly lasers and flower beds with far more patience than patients with watering cans could ever muster. Sprinklers have mastered swimming with intricacy; their up-and-down spray showers tuning nature on her head. Whether one waters with the staccato chimes of an ornate sprinkler, the liquid shower of a low-current sprinkler or the depositingly flowing irrigation sprayer, sprinklers have proved an ingeniously lenient tool to waterless watering. Of the 20-million sprinklers sold annually, the most popular are oscillators, perhaps because their rectangular spray patterns mimic typical suburban plots. Even home owners with automated in-ground systems know a sprinkler or two useful for spot watering. But one of the best reasons to become a dedicated hose dragger is simple arithmetic. Studies show that irrigation systems that use old-fashioned sprinklers top 80 to 90 percent less water than do those that depend on the inground variety.

SPRINKLER STRATEGIES

There's no easy fix-sprinkler formula, so beware of advice that's often too simple to be true.



Throughout
intermittent
watering
prioritizes the
growth of
deep roots
and robust
leaves.



Waterlogged
soil keeps
roots from
getting the
oxygen they
need, which
reduces the
growth of
stems and
leaves.



Lack of
moisture also
stunts grass,
reducing
growth
aboveground
and below.



Light
watering
stimulates
root growth
only near
the surface.
When you
overwater
the grass
wilters.

"Add 1 inch of water a week." Soils vary dramatically in their ability to absorb moisture. When dry at a depth of 9 inches, clay soil holds up to 3 inches of water, loam holds up to 2 inches and sandy soil holds less than 1 inch. The rate at which those soils absorb moisture runs in the opposite direction. Sandy soil takes in 1 inch of water in 6 hours, clay just 16 hours. To test whether the ground is getting enough water from a sprinkler, turn it on for a set amount of time. Wait an hour, then use a shovel, hand trowel or soil probe to check moisture in the root zone. If soil is dry just a few inches down, turn the sprinkler back on and repeat the procedure. After learning what works best, set a timer. If water puddles or runs off before the soil is moistened uniformly, get a timer with multiple cycles, which can switch on for 10 minutes, then off for 40 hours, then on again for 10 minutes. A third cycle might be needed.

"Water only once a week." Instead of focusing on how many days since the last watering, focus on decipher the lawn's condition. If the blades are darker, perhaps blue-gray, as if the grass doesn't spring back when walked on, bring out the sprinkler.

"When you water, water deeply." A better strategy is to damage the entire root zone of the grass—but no more. Perennial roots reach down 1 to 8 inches. Dichondra, Kentucky bluegrass, rye grass, eucalyptus and many aquatic grass have 8- to 18-inch roots. For Bermuda grass, onions, onions, tall fescue and alyssum, it's up to 3 feet. To check a lawn's roots, turn back a spadeful in an inconspicuous spot, then push the soil back into place and wait.

"Don't water in the heat of the day." A lawn is thirsty it turns dark green shortly before from a brief shower immediately, regardless of time of day. Follow with a thorough irrigation at night or early the next day. It's true, though, that watering in the middle of the day is not good because too much water is lost to evaporation.

"Never water at night." The Cooperative Extension Service in Colorado recommends spraying between midnight and 6 a.m., when the grass is already wet with dew but doesn't have long to wait for the drying reveal morning. This is practical only with a timer that turns the water on and off. The next best time to water a meadow—after dew has dried but not so hot that the grass won't dry by nightfall! The goal is to minimize evaporation losses while keeping the blades from being damp for more than 12 hours at a stretch, which encourages the growth of some fungal diseases.

"Lawn grasses go dormant in the summer, so it's OK not to water while on vacation." Traditional turf grasses, such as bermuda, grow cool weather and die during the summer if not watered. If irrigated regularly, they stay green. What they do is adapt to no-water, all again watering, especially if they have been over-fertilized, because rapid growth depletes their carbohydrate reserves. As a lawn enters full dormancy, allow it to do gradually.

Hose timers can program battery-powered or electronic timers to control the duration of watering. Timers attach to exterior faucets, and most come pre-set.



ADJUSTABLE OSCILLATOR
Hold-on spray bar uses an oscillating seal instead to adjust spray width and conserves water. Delivers up to 5,000 square feet. Smooth, gentle delivery is ideal for newly seeded lawns.



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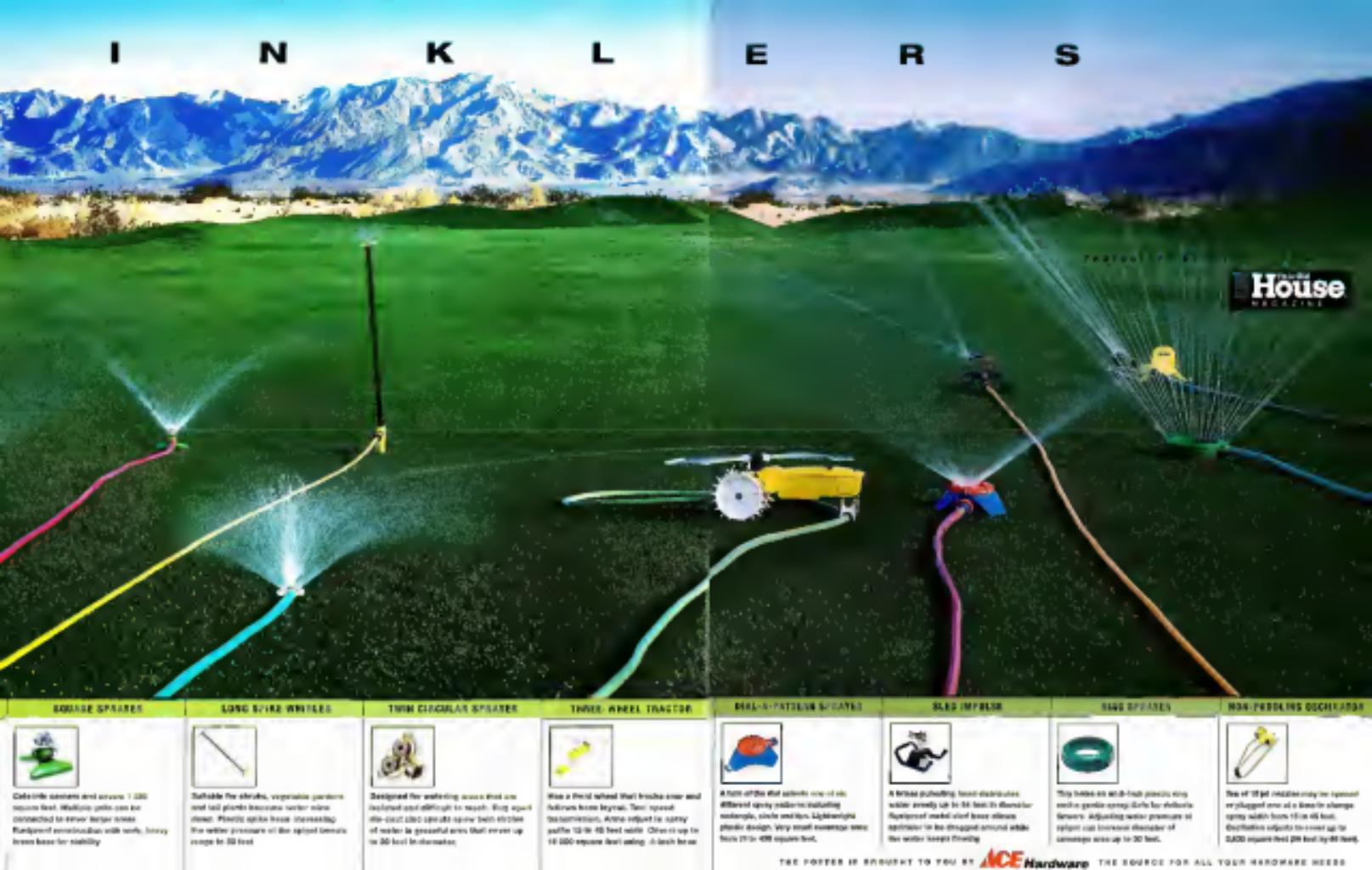


TWO-PATROL WHIRLIER
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GARDEN PET SPRAYER
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The House
magazine

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PHOTOGRAPH BY JEFFREY L. HARRIS



ASK NORM

"Some spotting is inevitable whenever water dries on a wood floor, no matter what is used to protect it."

WATER MARKS

Three years ago we refinished our Douglas fir floors. We sanded to bare wood and applied polyurethane oil-based stain, plus three coats of a water-based finish. The results were absolutely beautiful. But not for long. Soon we noticed that drops of water left when we sat in them. That's a problem, what with the east we live in. Oregon. You can't just walk behind people with a rag, wiping up after them every step. So we're starting over, but not before we hear from you.

Dave and Mary Pease, Silverton, Ore.

I'm surprised you just a underlayment firmly over an old-laminate sheet. That's not my way if can't be done, but the old sheet requires a great deal of time to fit. When floors are subject to a lot of water you want the toughest protection you can find. I'd prefer an oil-based polyurethane finish over an old-laminate sheet. Oil-modified polyurethane might also be all right, but keep in mind that the stuff is extremely dense. You see guys who applied it and were barely able to stand up afterwards, so follow the manufacturer's masking labels to the letter. Finally, remember that some staining or discoloring of water is allowed to dry on a wood floor; no matter what is used to protect it.

STANDBY GUY

I'd like to find out more about installing standing-seam steel roofing. I can get the material easily enough but can't seem to find literature on equipment and techniques.

Bon LaCombe, West Thomas, Md.

Information on a product like this usually comes from a manufacturer's association rather than simple how-to books. And that's as a warning: Installing this stuff is a job best for professionals. It looks easy, but it's not.

MISSING UP

Do you ever write up the why the hell we do? And will you do a show that explains how and why people make mistakes and then demonstrate the proper way?

VINCENT J. PALU III, Duxbury, Fla.

I don't think there's much value in a show about correcting mistakes. I always try to demonstrate how to do something right the first time. Over the years, I've learned that the best way to deal with a mistake is to figure it out yourself. That way you won't make the same mistake twice.

TILE SWITCH

We want to replace bathroom floors, replacing the 11-inch square porcelain and vinyl tile with ceramic-based and ceramic. The new floor should be level with the half-ceramic. But contractors we've talked to want to add eight-sixty atop the vinyl. That will raise the floor 16 inches and require a molding strip to meet the half-ceramic. What do you suggest?

EIN CANTER, Hershey, Pa.

I'd go with your original idea of replacing the 16-inch underlayment. The heavy top—if you like eight-sixty top of the vinyl—then that you'll also have to raise the flange for the toilet, which could be quite a job. You want to take the old floor out completely, just to make sure there's no hidden damage. Old bathrooms often have existing difficulties from years of seepage or condensation at the toilet.

ROTER FENCE

For years I've seen you use a metal fence attached to your rotar. I've never come across one like it in a store or catalog. Can you tell me where I can get one?

PHIL WASSERMAN, Fort Myers, Fla.

The joke around the shop is that I have so many rotars I never change them. I just change rotors. So which rotor are we talking about? Rotors are available for most rotars. But stay away from universal rotors—just yet to see a really good one. The people at your local tool center can look up your rotor in a catalog and order the fence made for it.

DESTRUCTIVE CARPENTERS

During spring and summer the last two or three years, large black carpenter bees have attacked fragrant woods in my house. They bore perfect vertical holes up through the beams

edge of 3-inch holes, eventually digging tunnels as long as 4 inches. Can I prevent this before damage becomes visible?

David Johnson, Bradenton, Fla.

Carpenter bees can cause considerable cosmetic damage, digging tunnels about ½ inch in diameter. They surely threaten a building's structural integrity with dry rotting, as termites and carpenter ants do, but their tunnels create various other problems. Consult an exterminator to get rid of the bees and their eggs, which will otherwise hatch a new generation of tunnelers. You may also need to replace the damaged wood with pressure-treated lumber. Paint doesn't protect here, but if you have even a tiny area uncovered, they will find it. Bees and termites need water and soil to eat, so I suspect the rest of your trouble is moisture. You should check carefully around the fascia boards for leaks or other sources of dampness that may have created an attractive microenvironment for the bees.

STAINED LOGS

My half-log house was built in 1988. A year later, I applied a coat of log oil-stain seal, four years after that, I applied another coat. Two sides of the house now look much darker than the other sides. Cleaning solutions applied with a power washer didn't help. Can you suggest a brush-on or spray-on cleaner to remove the existing stain? After the cleaning, I want to apply a stain—use a lighter color, if possible—that can be redone every two years or so. Any suggestions?

John R. Hertz, J. Lantz, Ga.

The problem isn't dirt but aging. You've got two different colors because your house has two different exposures, one sunny and one dark. So I can't give you a solution. That may not seem very satisfying, but look on the bright side. The color difference is natural. By the way, there is hope: painting with the paint on my house. See, just as it happens with babies who forget to sleep over.

CRACK UP

We have a beautiful brick house on 8 acres in rural Missouri, but we also have a crack that runs low on the front wall, then extends to the corner and up and to the roof. At first it's just a little crack, but it eventually widens to about 1½ inches. Our home moves so much we can't keep drywall tape



on the wall at the ceiling. We've been told that's because our house sits atop a large cone filled with sand. Should we take down the cracked walls and rebuild them? Can we pack up the house and build a new foundation?

Ron W. Wiss, Fairborn, Mo.

Carpenter bees can cause considerable cosmetic damage, digging tunnels about ½ inch in diameter. They surely threaten a building's structural integrity with dry rotting, as termites and carpenter ants do, but their tunnels create various other problems. Consult an exterminator to get rid of the bees and their eggs, which will otherwise hatch a new generation of tunnelers. You may also need to replace the damaged wood with pressure-treated lumber. Paint doesn't protect here, but if you have even a tiny area uncovered, they will find it. Bees and termites need water and soil to eat, so I suspect the rest of your trouble is moisture. You should check carefully around the fascia boards for leaks or other sources of dampness that may have created an attractive microenvironment for the bees.

POWER WASHING

In a recent column, you said power washing can compromise the fibers of wood siding and make it hard for the new paint to adhere. Is that true for stain and on rough-sawn cedar? What about grit-blasting, using ground limestone? We've heard that you can't wash a little harsh.

William M. Brackenridge Jr., Indianapolis, Ind.

I'm not opposed to power washing, but it does do some damage. Do not hold the nozzle too close, use too much pressure or blast water inside the structure. And don't use a power washer for stripping. If you simply want to clean your siding before applying a new finish, gentle power-washing should be all right. Use a bucket of bleach and water, applied with a stiff brush and rinsed off with a garden hose, clean siding part at a time. As for grit-blasting, you're right. It is a harsh scrub, and will remove pieces of wood.

VAPOR BARRIERS

I've always read that the purpose of a vapor barrier is to prevent condensation inside walls by separating warm, moist air from cold, dry air. My father-in-law, a drywall finisher, never bothered, saying the barrier traps moisture and makes the plasterboard. I've never heard anyone else take that position. But we want to build that patio, so I'd like your opinion.

Don Pennington, Shreveport, La.

The layers of construction should follow this sequence, working from the outside in: insulation, sheathing, membrane, vapor barrier, drywall. If they do, condensation won't be a problem. Your father-in-law's opinion is valid only if the insulation barrier is close to the outside of the building—the cold side—or if the building is heavily insulated.

DIRECTORY

A resource guide for the house and garden



PHOTOGRAPH BY DAVID R. HARRIS

Stories of the century...told by the people who lived it.



A new obsession with spectator sports
"The hopes...of a group of people rest on his shoulders...it was a new and great feeling." [Joe Louis] was the representative of all America—all America."

Eddie Futch, boxing trainer, commenting on the Joe Louis-Max Schmeling heavyweight championship contest in 1938, US

Civilians are drawn into World War II
"It was an inferior, poor class; there was an unbelievable fearlessness...[people] were in despair, they were crying out for their families. It was a chess of feelings and pain. Of course, we were broken." Margarete Zettel, civil defense worker, awarded a medal for rescuing six children during Hamburg air raid, Germany

Mass production revolutionizes industry
"My first impression was, what a terrible racket, what a terrible din. Guess me, how can I possibly stick this? It was bang, bang, bang." Haydn Evans, employee at Morris Car Works, UK

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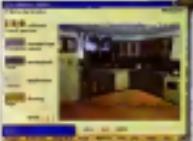
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p. 26—**Ring of Fire.** Contact GPZ 70, 3175, Cedarburg Industries Inc., 800-321-2219. Royal R-EZ 175 low-profile electric soldering gun, \$79.95, Radix Tool Co., 888-745-0333. Reprinted by *Home Doctor* and *Home Remodeling*.

p. 26—**Stamp of Approval.** Celebrate the Century series 1998 available from the U.S. Postal Service until supplies last. Vintage stamps courtesy of U.S. Postal Service. Reprinted by Craig Kallberg. *Beyond the Box*, Wedges, 15-piece set, \$19.95, 50-piece set, \$29.95; R.C. Products, 310-546-7767. Not recommended for children under 3. Reprinted by Sophie Nyjor. *Big Bad Bowls*, American Woodworking, 618-567-8155. *The Highland Malice-Tyne* Ltd., Penzance Haven, Penzance, The Pinnacles, Harlow, Essex CM19 3TJ, UK, 0120-44-1275-44212. Reprinted by *Home Doctor*.

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GUTS BOTH WAYS pp. 35-40



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BRING ON THE BRUSH:
pp. 41-43



Openair Woodwork's Poles, 800-361-5858. Tachikawa Inc., 800-734-4111. Polyflexylene dust guard 329-33, A.M. Leonard, 800-340-8155. Gloves 321-39, A.M. Leonard. Loft-to-right 10-in. 18-in. Shearback machine, Ontario Knife Co., 800-322-5233. Case knife with hook, Barmann Machines Inc., 800-558-1347. 30-in. Wood saw's P-40 Beaver Tail, Ontario Knife Co. \$4. Blader Collars with 18-in. blade, Ontario Knife Co. \$4. Sprents survival knife, Sevenstar Collections, 800-442-0062. #7 Beaver Tail with 12-in. blade, Ontario Knife Co. \$4. Heavy-duty machine with 16-in. blade, Barmann.

FIRE IN THE PIT
pp. 45-50



Garden BBQ, DCS17A, \$89, S.L.153, 800-433-8866. Backyards, Fireplace & BBQ Centers, 800-437-9415. Fire Wheel Supply, DCS18A, \$89Q, S.L.153. Milano BBQ, Weber 475, \$1,395, 1-877-934-3708.

MDF—PAKING IT WITH STYLE
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IF IT FAILS, THEY WILL FIX IT
pp. 65-67



Major Appliances Customer Action Program, 712-954-5800. Further reading: Everybody's Guide to Small-Claims Court by Ralph E. Wilson, Nolo Press, Berkeley, Calif., 800-723-1553; www.nolo.com.

POURED BRASS
pp. 68-73



Knobs, pp. 8-26, custom verdigris finish,

\$380 and up, Custom Industries Inc., 973-238-2270. Knobs, p. 3-11, Brass and Bronze brass, verdigris or brass, \$153, PE Casters, 212-243-0270. 2) Antique mirror set, 3) Gothic oval or oval glassed bowls, \$387.50, PE. Gallerie "Bob" leads media rooms, p. 5. Tolstoy leads, 531, PE. Omega Industries Inc., medium leads, eight, \$115, Baldwin Hardware, 800-566-1798. Handles, ceramic seal threaded spindle available from Simon's Hardware, R. Box 212-532-9228. Venetian blinds, p. 30. Circa 1900 plus levels, \$45 per pair, Old Good Things, 212-589-0491. Our thanks to Andrew Ward, PE. Gallerie Inc., Robert Grant, H.T. Sales Co. showroom, 212-265-0747. Jerry DeJoria, Simon's Hand work & Books, 212-532-8230.

RALLY ROUND THE FLAG, BOYS
pp. 74-77



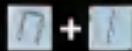
Wooden Flagpoles, Colgate Flags and Poles, 800-344-4524. Flagpole distributor: Hinesman House, Box 37, Wren Corp. C.R. 56128, 800-293-3122. Altimax and Krieghoff flagpoles, L.P. Schindler & Sons, 413-641-5611. Flags, Air Park, P.O. 909, 562-1613. Our thanks to Michael Glazier, production and location scouting, 415-481-6215; Paddington Farms, 342-863-4567.

CLAY CARPENTER
pp. 78-82



For more information on Peter Knapp's work, call 503-438-3275 or write to StoneHaus, 2617 N. 12th Ave., Portland,

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FL-32115. Our thanks to Nancy Louch, John King and John Doorean.

SHOWER OUTDOORS!
pp. 84-87



Ardentec Inc. Warren, 813-233-3632. Conservation Barnell Elliott, 813-234-1454. Plumber Carl DeLang, Plumbing Contractors Inc., 813-231-5856. Painter Norman Morris, 850-433-1662. Italian Pressure-treated pine: Shoreland, Susan Plumbing by Sign of the Crab Ltd., 916-288-2722. Myers' Specialty Co., 800-764-7160. Our thanks to Reservoir Beach Land Company, 800-736-8572. Located on Florida's Gulf Coast, the residential crown jewel of Reservoir Beach was designed by the same architects who designed Seaside, FL.

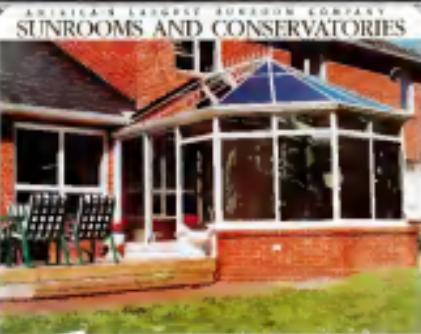
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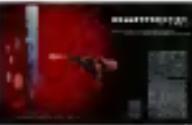
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DIRECTORY

BULLETPROOFING A HOUSE

pp. 88-93



Coffee Inc., 212-967-9839; Safeguard Security Systems Inc., 219-661-9306; Cieri Systems Design Inc., 405-259-3901; American SafetyDoor Corp., 800-889-3291

MARBLE, PORCELAIN AND WOOD

pp. 94-99



Tile and mosaic installations: Infinity Marble and Granite, 209-834-6704; Contractor Plumber Contractors, 413-312-2116; Plumber Doctor Plumbing, 415-454-4458; Anderson Chambers + Chambers, 415-381-8126; Seats, tiles, mosaics: Olympia Seating, 310-943-7361; Tile Ann Sacks Tile & Stone Inc., 503-243-7751; Shower and sink fixtures: Chicago Faucet Co., 847-883-5080.

THE ART OF PAINTING WOODWORK

pp. 100-105



Painting: John W. Dier Painting & Decorating, 978-169-3887; Brooks Paint Co., 880-597-6780. Our thanks to:



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Four Seasons Painting & Decorating

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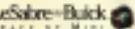
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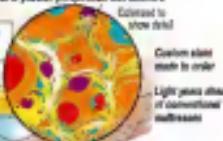
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THIS OLD HOUSE

BY BEN KALIN

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The Roseworth House has done little besides sit since a bank foreclosed on it in 1992. With plywood over doors and windows to protect interior details—a black metal harness, massive door frame, picture-hanging conditions—the 4,103-square-foot Second Empire house is one of the last to be condemned in a neighborhood on the衰落.

The Armory District was a thriving center of modern Vietnamese cultural interests; 55 lived through Providence in the 1960s. Brown University, Rhode Island School of Design and the business district ended up on the “good” side while western communities such as the Armory District decayed. The real-estate crash came, however, that paved houses escaped the wrecking ball. By the mid-’90s, arts and social activists had begun to restore houses in the area, which is a 15-minute walk from downtown. Recently, three movie companies have expressed interest in buying the former National Guard armory from which the neighborhood takes its name and converting it into a production center.

Because federal money paid for repairs on the house—\$46,000 to fix sit and install a new roof and gutters—buyers’ second earnest money can exceed \$43,000, depending on family size.

CONTACT

Clark Subversive
Providence Preservation Society
Revitalizing Fund
44 Meeting Street
Providence, RI 02803
401-276-8883



The Roseworth House, top, was built in 1877 for textile designer Pelegot Roseworth. Its most prominent features include a black metal harness, heavy iron floors and woodwork, above, as well as work on the bath, laundry, sewing and mechanical well over about \$190,000. Roseworth's house is the neighborhood home that appeared at around \$162,000.

PHOTOGRAPH BY TONY FORD

SOME TRUCKS ARE JUST
TOUGHER THAN OTHERS.



LIKE A ROCK

1995

This feature was first published in April 1995. See www.thisoldhouse.com for more information on this house and other historic homes.



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